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JAN. 1993

The Agricultural Transition in Central and Eastern Europe and the Former U.S.S.R.

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Report No 11635 Type (PUB)
Title THE AGRICULTURAL TRANSITION IN
Author BRAVERMAN AVISHAY
Ext 0 Room Dept
BOOKSTORE JANUARY 1993

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A World Bank Symposium

*The Agricultural Transition in Central
and Eastern Europe and the Former U.S.S.R.*

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in Central and Eastern Europe
and the Former U.S.S.R.*

edited by

Avishay Braverman, Karen M. Brooks, and Csaba Csaki

The World Bank
Washington, D.C.

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First printing January 1993

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Library of Congress Cataloging-in-Publication Data

The Agricultural transition in Central and Eastern Europe and the former U.S.S.R. / edited by Avishay Braverman, Karen M. Brooks, and Csaba Csaki.

p. cm.

Includes bibliographical references.

ISBN 0-8213-2322-9

1. Agriculture—Economic aspects—Europe, Eastern—Congresses.
2. Agriculture—Economic aspects—Central Europe—Congresses.
3. Agriculture and state—Europe, Eastern—Congresses.
4. Agriculture and state—Central Europe—Congresses.
5. Privatization—Europe, Eastern—Congresses. 6. Privatization—Central Europe—Congresses. I. Braverman, Avishay, 1948- .
- II. Brooks, Karen McConnell. III. Csaki, Csaba.

HD1820.7.A47 1992

338.1'0947—dc20

92-42198

CIP

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FOREWORD

The Central and Eastern European region is undergoing fundamental economic and political transformation. The effort to build a new agrarian system based on private ownership, true cooperatives, and a market economy is introducing changes far beyond the reforms of earlier years. States of the former Soviet Union are also crafting comprehensive economic and political reforms. Transformation in Central and Eastern Europe and the former Soviet Union has really just begun, and the outcomes are impossible to predict. There can be no doubt, however, that these changes will fundamentally reshape agriculture as a whole in the respective countries and will influence the behavior and role of the region in international agrarian relations.

In recognition of the global and historical importance of developments in Central and Eastern European and (then) Soviet agriculture, the Agriculture and Rural Development Department of the World Bank together with the National Bank of Hungary organized a conference in Budapest from August 29 to September 1, 1990, to explore issues common to the Central and Eastern European and Soviet agricultural transition, and to discuss the particular experiences of individual countries. The conference had three objectives: (a) to examine previous experience with agrarian reform in socialist countries; (b) to identify alternative strategies for the transition from central planning to the market; and (c) to identify key areas of research to facilitate the design and implementation of new agricultural programs.

His Excellency Ferenc Rabar, Minister of Finance of the Republic of Hungary, opened the conference. In the Budapest Hilton, over 100 participants representing 20 countries, including the USSR and all the countries of the Central and Eastern European region (except Albania), gathered to discuss the dilemmas and future of the transformation of the region's agriculture. The attendees included general economists, agricultural economists, social scientists, and policymakers at the national and international levels. This book is the result of an event of great importance.

Preparation for the conference began in early 1989. The rapid collapse of the Central and Eastern European political systems was not obvious at that time. The sponsors of the conference planned to discuss agricultural reform in the post-Stalinist economic and political structure. The conference covered much more than was originally envisaged. This was virtually the first occasion when the representatives of the Central and Eastern European region were able to have a free and open discussion about the critical situation of agriculture and discuss strategies of improvement among themselves and with their colleagues from the Western world. The political changes in late 1989 and throughout 1990 in these countries created the conditions for a real exchange of ideas. Instead of formal speeches, animated discussions and presentations were the main conference fare. The participants were able to be part of a high-level intellectual and scientific program where, for the first time, the issue was not how to reform socialist agriculture, but how to move to market-based food production. In the final panel discussion, Joseph Stiglitz, D. Gale Johnson, Csaba Csaki, Josef Okunewski, Michiel Keyzer, Avishay

Braverman, and I summarized the most important conclusions and findings, most of which are mentioned in the Introduction to this volume.

The conference produced a broad selection of papers on the general aspects of economic reforms, the international environment, the state of the ongoing reform processes, and relevant experiences in other parts of the world. The preparation of the country case studies was supported by a three-day pre-conference workshop held in Visegrad, Hungary, in May 1990.

The conference was initiated and designed by the editors of this volume and was financially supported by the World Bank, the National Bank of Hungary, and the Ford Foundation. The technical arrangements were provided by Arlene Elcock of the Agricultural Policies Division of the Agriculture and Rural Development Department of the World Bank and by Maria Sebestyen Kostyal at the Department of Agricultural Economics at the Budapest University of Economic Sciences.

Far from being conference proceedings, this volume is the product of extensive editing and revision to reflect developments through the spring of 1991. Karen Brooks had principal editorial responsibility; the papers were further edited and prepared for publication by Sandra Giltner and Carol Best. The contributions of all who were concerned with the conference and the volume are gratefully acknowledged.

MICHEL PETIT
Director
Agriculture and Rural
Development Department

October 1992

ABBREVIATIONS

CAP	Common Agricultural Policy (of the European Community)
CPE	centrally planned economy
CMEA	the (former) Council for Mutual Economic Assistance
CSFR	Czech and Slovak Federal Republic
CSSR	the (former) Czech and Slovak Socialist Republic
ECE	Economic Commission for Europe (United Nations)
EC	European Community
FAO	Food and Agriculture Organization of the United Nations
FRG	the Federal Republic of Germany
GATT	General Agreement on Tariffs and Trade
GDP	gross domestic product
GDR	the (former) German Democratic Republic
GSP	Generalized System of Preferences
ha	hectare(s)
hp	horsepower
IMF	International Monetary Fund
kg	kilogram(s)
MFN	most-favored-nation
NMP	net material product
OECD	Organization for Economic Cooperation and Development
OPEC	Organization of Petroleum Exporting Countries
USSR	the (former) Union of Soviet Socialist Republics

INTRODUCTION

Avishay Braverman
Karen M. Brooks
Csaba Csaki

Central and Eastern European countries and the states of the former USSR have embarked on an exhilarating but difficult political and economic transition. Changes in agriculture in Central and Eastern Europe and the former USSR will profoundly affect the individual countries and the region, and alter the world agricultural economy in the twenty-first century. Despite many differences, these countries face a core of common issues as they design and implement agrarian reform. The inherited agrarian institutions of collectivized agriculture were unable to meet rising demand for food and fiber at constant or declining costs. In most countries, the failure of the agricultural economy was accompanied by serious degradation of land and water quality. Faced with rising domestic costs, high expenditures for imported food, and a deteriorating natural resource base, the countries of this large and important region have begun far-reaching agrarian reforms. Present changes go far beyond the reforms of earlier years to create a new agricultural structure based on private ownership and a market economy. Participants in the transition have little choice but to forge ahead despite institutional rigidities, high external debt, nonconvertible currencies, and inadequate protection for vulnerable portions of society, all of which pose severe problems for traditional macroeconomic and price reforms. Little is known about the consequences of (and tradeoffs among) different paths or policies.

Most of the papers prepared for the 1990 World Bank–National Bank of Hungary conference on the agricultural transition in Central and Eastern Europe and the USSR are presented herein. They provide a rich set of references for understanding the problems of agricultural transition in Central and Eastern Europe and the former Soviet Union, and for evaluating alternative paths open to the governments in the region.

AGRICULTURE OF THE REGION ON THE EVE OF THE TRANSITION

Eastern Europe and the former Soviet Union account for around 20 percent of the world's agricultural resources and 8 percent of the world's population. The region has some 12–16 percent of world livestock. In these countries, industry is now the dominant branch of the national economy, though the importance and popular awareness of the agrarian sector are stronger than in the majority of developed countries. The contribution of agriculture to net national production is between 8 and 20 percent. The lowest percentage contributions are in the former GDR and Czechoslovakia and the highest are in Hungary and Romania. Both in absolute numbers and proportion of the total workforce, the agricultural population in Central and Eastern Europe is decreasing. The decrease in absolute numbers slowed, however, in the second half of the 1980s.

The natural conditions for agriculture in the region are on the whole favorable. All of the smaller countries are in a temperate continental climatic zone. In the northern countries the climate is cooler and more humid, and the soil quality is weaker. The conditions for agriculture are above average in Romania, Hungary, and Bulgaria. The former Soviet Union has a vast diversity of agroecological conditions, and a high potential for agricultural production.

Agriculture in the respective countries developed quickly in the first years of the 1970s, but growth subsequently slowed. At the beginning of this period, the annual growth of agricultural production in Central and Eastern European countries was about 3 percent per year. By the middle of the 1980s, it was 1.5–2.5 percent, varying widely by country. By the end of the 1980s, the difference among countries became more visible and production growth slowed further.

The impact of collectivization dominates the agrarian structures throughout the region. The objectives of collectivization were similar in each country, but the methods and resulting structures differed considerably. In Czechoslovakia, Bulgaria, the GDR, and Romania the socialist reorganization of agriculture mimicked the Soviet model. In these countries the typical form of agricultural enterprise came to be the state or cooperative large-scale farm of several thousand hectares. In Bulgaria, agroindustrial complexes came into being as a special fusion of state and cooperative farms. In the middle of the 1980s in Bulgaria, most of the agricultural land was divided into 150 gigantic complexes. One of the particular characteristics of the GDR was the separation of plant cultivation and animal husbandry farms. Collectivization took its own route in Hungary, where cooperatives have always been relatively independent.

In the countries that collectivized, private agricultural production still existed in household plots. Yugoslavia and Poland preserved the predominance of private farms. The dominance of socialist institutions in marketing, however, and government preference for socialized agriculture limited the opportunities in private agriculture. The political tolerance for private activity changed frequently. Hungary was the only place where household and subsidiary farming was continuously tolerated and often supported by the system. Private producers concentrated on animal husbandry and gardening; grain production and industrial crops were almost exclusively concentrated in the state and collective sectors. Private production was the lowest (about 10 percent of agricultural production) in the GDR. Apart from Poland and Yugoslavia, it was the highest in Hungary, where one-third of agricultural production came from the private sector even in years past.

In the first half of the 1980s, the standard of living in most of the countries in the region was still improving, although the rate of improvement was falling. In the second half of the decade this improvement stopped, and in almost every country the standard of living declined. In most of Central and Eastern Europe, the calorie consumption per capita (at about 3,300–3,500 calories a day) reaches or surpasses the Western European standard, but differences in diet are substantial. The consumption of fruit, particularly tropical fruits, is low in Central and Eastern Europe. In Czechoslovakia, the former GDR, and Hungary meat consumption approximately equalled that of wealthier countries in the EC. Romanian, Polish, and formerly Soviet meat consumption per capita is below EC levels, although it is still higher than in market economies with comparable income levels.

In 1986–90, Eastern Europe and the USSR together were net importers of agricultural products amounting to about \$15 billion¹ annually. Soviet net imports were approximately \$15 billion, and imports of the six smaller CMEA countries were, taken together, roughly offset by exports to the USSR and the rest of the world. The six countries can be classified as either net importers or net exporters of agricultural products. Czechoslovakia, the GDR, Poland (though at a quickly falling rate) and Yugoslavia can be characterized as the former net importers. In the GDR and Czechoslovakia, the net import balance was particularly high. Poland, on the other hand, had sizeable exports to offset even greater imports. The net agricultural imports of the country have recently fallen to about one-quarter of the average annual amount during the past ten years. Bulgaria, Hungary, and Romania are traditionally net agricultural exporters; Hungary's is especially prominent. In 1989, more than one-third of the total European CMEA agricultural exports came from Hungary.

The agricultural legacy of socialism throughout the region includes:

- ▶ large, inefficient farms with high costs of production;
- ▶ a high level of food consumption relative to market economies of comparable prosperity;
- ▶ subsidized food prices;
- ▶ excess demand for food at those prices;
- ▶ macroeconomic imbalance, including budget deficit, inflation, and foreign debt;
- ▶ pervasive monopoly in food processing and distribution.

In the second half of 1989 and 1990, the political tide sweeping Central and Eastern Europe and the events of August 1991 in the USSR opened a new era in the region's agriculture. The consecutive attempted reforms of the socialist system of agriculture ended, and the process of systemic transition began.

The transition has proceeded within a regional recession throughout 1992. In Czechoslovakia, Hungary and Poland the recession has been accompanied by improvement in several important economic indicators, such as the trade balance, foreign investment flows, and inflation. These developments, plus the closer linkage with Western Europe have provided a more favorable and dynamic environment for the agricultural transition in these three countries. In the Balkans and the former USSR, however, the recession is severe and less progress toward stabilization and rebuilding is apparent.

Even where macroeconomic stabilization has been elusive in 1992, however, some improvement in agricultural supply and demand balances has been achieved, largely through price liberalization and removal of some restrictions on marketing. Land reform and farm restructuring is underway, but the impact on supply in the short run has been neither dramatically positive nor negative. In the longer run, changes in land ownership and farm structure will dominate the supply adjustment, since it is through enterprise reform that new economic agents and behavior are created. In the short run, changes in utilization and demand, both derived and final, have had the greater impact on food balances. Availability and diversity of food has increased, in some places dramatically. Food prices have risen in nominal terms, but in general have lagged price increases in other goods and services, and the relative price of

1. Unless stated otherwise, all dollar amounts are current U.S. dollars. A billion is 1,000 million.

many foods has fallen. A notable exception is meat, the most subsidized food under the old pricing regime. A fall in demand for meat and in derived demand for feed grain throughout the region has initiated changes in production, marketing, and trade that will improve agricultural efficiency and enhance agriculture's contribution to stabilization and growth.

Price liberalization throughout the region brought deterioration in agriculture's terms of trade. The deterioration reflected removal of producer subsidies implicit in the old price structure, and also reflected the slowness of producer responses to new demand levels and prices. The deterioration was particularly pronounced in 1991, but has improved somewhat in 1992, as supply and utilization have responded to the new relative prices. Nonetheless, the financial performance of agriculture, particularly of producers still bound to the former technology and commodity mix, is poor. The question of whether and how governments should respond to agriculture's financial difficulties will remain the dominant policy issue of the transition.

Other main issues of the agricultural transition remain subject to heated political debate. We intended the World Bank-National Bank of Hungary 1990 conference in Budapest and the publication of these papers to be a modest contribution to the success of this historic endeavor.

THE AGRICULTURAL TRANSITION

The unifying theme of this book is the common dilemmas and options of agricultural transformation in countries that differ in size, resource endowment, level of development, extent of market imperfections, and political conditions. Although this volume is a product of the Budapest conference, it is not a volume of proceedings. Not all the papers presented at the conference are included, and those presented herein were revised and partly updated after the conference. We hope this book will contribute to the study of this topic by bringing together in one place the most important dimensions of agricultural policy reform in Central and Eastern Europe and the Soviet Union within the context of concomitant changes in international trade and policy. The volume includes comparison with the experience in two other countries—China and Israel.

A note on terminology is appropriate. Concern for historical as well as geographic accuracy has led to the resurrection of the term "Central Europe" to apply to some of the countries. Since there is no clear consensus on which part of Europe is Central and which Eastern, the editors have made the arbitrary choice to refer to the region as "Central and Eastern Europe," although much license is allowed. The absorption of the GDR and the reorganization of the former USSR means that references to these states should be taken as applying to their historical domains.

Because the volume contains contributions by twenty-three authors from eight countries, traditions of scholarship inevitably vary. Most contributors faced problems regarding the availability, reliability, and comparability of official agricultural statistics. The contributors and editors have done their utmost to provide specific and uniform citations.

The first section of the book includes two papers covering the historical and conceptual background of issues central to the subsequent papers. In "Historical Experience of Central and Eastern European and Soviet Agriculture," D. Gale Johnson discusses the etiology of socialist agrarian institutions. Collective farms were not designed solely, or even primarily, as economic

institutions. Yet they were intended to perform two important economic functions in the earliest period of collectivized agriculture: the transfer of resources from agriculture to industry, and technological modernization. Johnson argues that the economic cost of collectivized agriculture has been immense, in part because the model is inferior, and in part because it was implemented without regard for human values or common sense. Joseph E. Stiglitz uses insights derived from the economics of information to evaluate the paradigm of the market economy that provides the end point of the transition. He argues that the market economy with costly information is different from the simpler world in which Adam Smith's invisible hand keeps order. The understanding of markets and the role of government is correspondingly different. The legal framework and contracts negotiated and enforced in this more complex world become important when costs of information are recognized, and the creation of an appropriate legal framework becomes one of the most important tasks of government during the transition. A second and equally important task is managing the redistribution of wealth that is part of the transition, since the distribution of wealth affects the contracts into which economic agents enter, and affects the efficiency of resource use. The economics of information and contractual choice are particularly important in agriculture.

The international environment in which the Central and Eastern European and Soviet transition is occurring is addressed by the four papers presented in Part II of the volume. G. Edward Schuh examines the pervasive role of government in agriculture in developed market economies. Government intervention in developed market economies affects opportunities that producers and consumers from the Central and Eastern European and Eurasian region face, now that barriers separating them from world markets are lower. Some forms of government intervention in agriculture in developed market economies may be worth emulating; others are to be avoided. As Schuh argues, government policies affecting agriculture most are not necessarily those with a clear sectoral focus. Monetary policy, exchange rates, and interest rates are not usually viewed as instruments of agricultural policy, but their effect on agriculture in market economies, both developed and developing, has been substantial. In chapter 4, Stanley R. Johnson examines the international agricultural markets in which the countries of the Central and Eastern European and Eurasian region will participate in new ways. Developments in the international agricultural economy will have a greater effect on the national economies than in the past. The international economy will continue to be affected by the performance of agriculture in these regions, but the nature of the link between the national and international economies will change if reform succeeds. The interaction of national policy and international trade will become more important. Multilateral trade negotiations will affect trade flows, and may affect domestic policy if the reforming countries choose to observe multilateral trade conventions. Johnson's discussion of the international environment focuses on how changes in the international economic environment will affect the progress of reform in Eastern European and Soviet agriculture, and how changes in domestic agricultural policy in these countries will affect the world agricultural economy.

Agricultural trade relations between Central and Eastern and Western Europe are crucial. The Common Agricultural Policy of the EC has created surpluses and reduced costs for food importers in Eastern Europe and the USSR; it has also erected barriers to actual and potential agricultural exports from east to west. The future of economic reforms in Central and Eastern Europe will depend in part on what accommodation is reached with post-1992 united Western

Europe. The agricultural transition to date has reduced imports of food and fiber and increased potential exports. Whether and how much agricultural sectors of the countries in transition must adjust depend crucially on future access to markets, most importantly the united European market. Can recovery in the former USSR restore some traditional markets for selected Eastern and Central European agricultural exports? What concrete steps will be needed for Central and Eastern European countries to join or at least constructively coexist with Western Europe after 1992? These are the main questions that Stefan Tangermann discusses in his paper. Andras Inotai addresses agricultural trade relations between and among countries of the region. This chapter was written during the dismantling of the CMEA but before the breakup of the USSR. The CMEA was a weak economic alliance, in part because of the burden that inefficient agriculture placed upon each of the constituent economies. Most were forced to rearrange production and trade in order to import food and fiber not available within the alliance. Andras Inotai explores the agricultural dimension of the economic problems of the former CMEA as well as future agricultural relations among members of the former alliance.

Part III of the volume turns to three crucial internal components of the transition. Property relations, pricing, and financing each present major dilemmas. The property relations and organization of traditional collectivized agriculture incorporate an incentive structure that inhibits efficient use of resources. The search for better incentives involves restructuring of contractual relations that bring land, labor, and purchased inputs together in the productive process. The most visible part of the process is the reorganization at the farm level through redistribution of land and the emergence of new kinds of farms. New property relations and forms of contracts embody different levels of risk and return for producers, and these affect rates of adoption. Changing the incentive structure in marketing is as important as reorganizing the farm. The structure of marketing both for inputs and output clearly affects the risks of alternative contractual arrangements. Karen Brooks' chapter considers the incentives built into traditional collectivized agriculture and their impact on the adoption of new contractual relations and the emergence of new farms. Early somewhat naive expectations for rapid emergence of large numbers of private individual producers have given way to a growing understanding of the forces that will affect farm structure and organization in the future.

Prices and finance have a crucial role in the transition. Each of the reforming countries has inherited from the past a dysfunctional pricing mechanism and distorted prices. Problems with pricing spill over to financial relations, both at farm and macroeconomic level. Price reform and changes in farm finance must be written into the reform at an early stage. Michael Marrese's contribution considers alternative pricing mechanisms and strategies, both at the farm level and the macroeconomy. He examines the link between domestic producer prices and international trading prices, and whether and how consumers can be compensated for the change in retail food prices in a way that relieves continued upward pressure on wages. The urgency of this issue increases with the shock that accompanies price liberalization and the share of food in consumer budgets, and is greatest in Bulgaria, Romania, and the sovereign states of the former USSR.

Large agricultural subsidies and undisciplined lending contribute to inflation and further disequilibrium in all consumer markets, including food. The farm debt problem complicates reorganization of property relations and managerial responsibility. The transfer of ownership of farm assets will require new lending institutions; independent producers will be exposed to

changes in interest rates and asset values with which they have little experience. Charles Calomiris reviews the concepts of asymmetric information in credit and asset allocation and draws on the experiences of successful agricultural lending in other developing areas.

In Part IV of the volume, the authors turn to experiences in individual countries to evaluate the agenda and progress of the agricultural transition. The case studies necessarily lag behind the rapid pace of events in the region; they could not be continuously updated. Nonetheless, they provide specific detail for the broader issues raised earlier, and present the initial conditions from which subsequent progress, or in the case of Yugoslavia, deterioration, has resulted. In Hungary, Poland, and Yugoslavia, agricultural changes started early, while in the rest of the region (especially in the Soviet Union), real change was not evident by the first half of 1990, when these papers were commissioned. The papers in Part IV can be loosely described as country case studies. Their authors discuss not only the actual problems and historical reference but provide direct linkages to the further tasks of transformation. The issues discussed in these papers are relevant not only for the transformation of Central and Eastern Europe, but also for other nations that desire a greater integration into the global economy and seek an improved understanding of the domestic preconditions and policies that will promote this.

Part IV includes three papers written by Hungarian authors. The location of the conference in Budapest and the fact that for more than twenty years Hungary has been in the forefront of economic reforms in the communist world allowed the conference to examine the Hungarian experience more fully. Marton Tardos briefly reviews the transition issues in general, Csaba Csaki and Gyula Varga cover the major agricultural issues, and Balas Szelenyi and Ivan Szelenyi treat the social impact of the agrarian reform.

Dariusz Rosati and Wlodimierz Rembisz, Vladimir Stipetić, and Viktor Nazarenko, examine aspects of the Polish, Yugoslav, and Soviet cases respectively. Karl-Eugen Wädekin highlights the contrast between Czechoslovakia and the former GDR on the one hand, and Bulgaria on the other.

The last part of the volume includes two papers presenting relevant experience from Israel and China. The cooperative experience of Israel discussed by Yoav Kislev contains important lessons for Central and Eastern Europe. Various forms of new cooperatives are already appearing in Central and Eastern Europe as transitional or longer term forms of organization, and the Israeli experience carries many cautionary lessons.

The success of Chinese agricultural reform has generated much international interest. In China, the reform process is still occurring within the framework of the communist political system; the basic institutions and principles of central planning have not been modified. At the farm level the pace of change has been more rapid and its scope more complete than anywhere in Central and Eastern Europe. The paper by Lin, Burcroff, and Feder provides an important counterweight to expectations that the agricultural transition in Central and Eastern Europe or the former USSR will be similar to the Chinese experience.

The theme of this conference was "Dilemmas and Strategies"—"dilemmas" reflecting the absence of clear, easy solutions to the problems of the agricultural transition, and "strategies" reflecting the imperative to move ahead despite problems. The case studies show that the initial conditions and progress to mid-1990 differ considerably among countries, but several generic dilemmas appear. One of these is property rights in land. Unambiguous private ownership of

land with fully marketable rights is essential if agriculture in the region is to realize its considerable potential. Highly efficient new farms, however, cannot be created by fiat. Initially, land may be used less efficiently than it was in collective management. As factor and product markets develop over time, a new distribution of land ownership and use will emerge. The legislative affirmation of private property rights in land is a necessary first step toward efficient private agriculture, but it may not bring quick gains in productivity.

A second dilemma is in the area of price liberalization. Governments have postponed this unpopular step until the shock to consumers is great. Because of the postponement, budget deficits are high and funds to meet the needs of poor consumers are limited. Moreover, targeted assistance is needed at the same time that the administrative ability to find vulnerable people and deliver benefits is reduced. Although the short-run cost of liberalization to consumers is high, the cost of reimposing controls is even higher.

A third set of dilemmas relates to limits on competition, both in domestic and foreign markets. The success of price liberalization and subsidy removal depends on both the degree of competition in domestic markets and the openness of world markets. At the start of the transition there was little domestic competition and world markets were restricted by trading barriers and subsidies. Liberalization is nonetheless necessary to stimulate investment and new entry in domestic markets, and to elicit negotiated access to protected international markets.

A final dilemma is the relationship between politics and economic policy, an area barely covered by the conference. The governments of the socialist era used instruments of repression and social control, including patronage and economic privilege through subsidies and preferential access to goods and services. The new elected governments are rejecting institutionalized repression, and are dismantling subsidies and most preferential access. Democracy, where it functions, makes governments vulnerable to populist pressures at a time when they have few resources to distribute. Surviving this period requires wisdom and restraint on the part of electorates uniquely unprepared to understand the economic logic of policies they are asked to support. If the investment in general education that occurred under socialist governments explains (in part) the restraint and maturity of the general population to date, that investment may be the most positive legacy of the socialist era.

Several important strategies are emerging to confront the dilemmas of transition to a market-based economy. Countries are enlisting the international community to provide financial support, market access, and training. An early and clear commitment to the legal protection of property rights, competition, and the rule of law is crucial. Perhaps the most important strategies to promote the agricultural transition originate outside the sector, in stabilization of the currency and exchange rate so that marketing of food revives. The reform process is most advanced in Czechoslovakia, Hungary, Poland, and in the former GDR. In these cases, relatively developed agriculture and (in Hungary and Poland) the early start of reforms have been combined with political transition and the creation of multiparty democratic parliamentary systems. Political evolution is less clear in Romania and Bulgaria. Fundamental change in the Soviet Union made the early stages of the transition possible in the rest of the region. It is ironic that the political and agricultural future of the countries of the former USSR is the least certain of all.

Part I Background and Concepts

HISTORICAL EXPERIENCE OF EASTERN AND CENTRAL EUROPEAN AND SOVIET AGRICULTURE

*D. Gale Johnson**

The intended and actual contribution of agriculture to the industrialization of the Soviet Union¹ remains a subject of considerable dispute among historians and economists. The question of whether collectivization resulted in a transfer of resources to industry from agriculture is irrelevant to the question of agriculture's contribution to industrialization. The collectivization was carried out with such ineptitude and viciousness that over its first decade there was no net transfer from agriculture to industry relative to *what would have occurred had the existing mostly private agriculture been tolerated for that period of time*. Even when it is shown that farm people were exploited and resources were transferred from agriculture to the rest of the economy, this is not sufficient to credit collectivization with contributing to industrialization, let alone to the growth of national income.

Enormous and preventable losses of capital, both human and physical, accompanied the collectivization of agriculture. Had the losses not occurred, these resources would have contributed substantially to agricultural output during the 1930s, resulting in lower food prices in the cities and making possible a transfer of at least as many (and probably more) workers from the countryside than actually occurred. If 5 million people had not died of famine in 1932 and 1933, and the more than 2 million kulaks who were deported (Medvedev 1987, p. 79) had remained on their farms, farm output would have been much higher than it actually was during the 1930s, with even more modest demands upon the industrial economy than were actually made. It is well within the realm of possibility that without collectivization, farm production in the late 1930s would have been as much as 25 percent greater than it was.

The destruction of physical capital during the collectivization drives and the famine years was enormous, especially in terms of draft animals (horses) and all categories of livestock. Even if it is assumed that the famines of 1932 and 1933 were caused by nature and not by Stalin's policies, most of the losses of livestock occurred before the onset of the famine. The number of horses declined from 32.6 million in January 1929 to 21.7 million in January 1932, before the onset of the famine in that year. The number of cattle fell from 60.1 million in

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1. This is far from the first paper on the role of collectivization and industrialization in the Soviet Union. One can hope that it is the last or among the last. For an excellent review of some of the vast literature on this topic, see Wheatcroft, Davies and Cooper 1986 especially footnote 7 (p. 266) for references of major discussions.

January 1928 to 38.3 million in January 1932. There were substantial declines in the number of sheep and hogs between 1928 and the end of 1931 (Johnson and Kahan 1959, p. 230). The declines of a third in horse and cattle numbers by the end of 1931 can be attributed to the collectivization drive; some of the subsequent declines that occurred in 1931 and 1932 probably were due to the same cause. But there is no reason not to count the loss of livestock that was directly the consequence of the famine with the losses due to collectivization. The famine was man-made and not caused primarily by nature. According to Khrushchev, 1932 and 1933 were not the last times that Stalin exported grain while Soviet citizens starved.

It is even more difficult to accept as valid the contention that collectivization was necessary to modernize agriculture or that it contributed to that end. If this were an important objective, and in Stalin's mind it was, collectivization was an enormous failure and a costly burden on the Soviet economy. One indication that Soviet agriculture was not modernized by collectivization was that average yields were lower in 1935–38 than in 1925–29 for grain, potatoes, sunflowers, and flax (Johnson and Kahan 1959, p. 211). Yields increased for cotton (due mainly to the abandonment of cotton production on unirrigated land) and sunflowers. Even the 1950–54 grain yield was no higher than in 1925–29. By 1950–54, most of World War II's adverse effects on agriculture should have been overcome. Consequently, if we assume that the war delayed agricultural modernization by a decade, it follows that it required 15 years just to regain the yield level attained by the largely private agriculture of the late 1920s.

Depending upon the relative weight given to current inputs, total factor productivity in Soviet agriculture declined by 16 to 26 percent in the period 1928–38 (Johnson 1961). If, in the absence of collectivization, factor productivity would have increased by just one percent annually, collectivization of Soviet agriculture resulted within a decade in a loss in total factor productivity of from a fourth to a third. So much for collectivization leading to modernization.

For collectivization to have facilitated agricultural modernization, rational programs to achieve that end would have had to be in place. Such rational programs did not exist during the 1930s; the situation hardly improved following Stalin's death and up to the present time. The modernization of agriculture is a complex undertaking, but it was dealt with very simplistically during the 1930s—tractors and combines. Even by 1937, the power provided by all the tractors that were produced and remaining in inventory was only 50 percent more than the loss of animal draft power from 1928 to 1933. But many functions that were performed by horses could not be performed by the available tractors and machinery, such as cultivation of row crops, (for which the numbers of tractors was too limited), and transport. Tractors were not an adequate substitute for horses.

The mechanization was misguided and unbalanced. For example, in his effort to copy Western, primarily American, agricultural technology, Stalin jumped one stage in the modernization of grain production. He went from the scythe and the sickle and the threshing floor directly to the combine and the drying and cleaning floor, bypassing the binder and the threshing machine. Under the conditions that prevailed in much of the grain-growing areas of the USSR, the combine did little to reduce the amount of labor required in the production of grain until well into the 1970s. It brought large harvesting losses in many years, and these losses would not have occurred with the binder and threshing machine technology. Even today it is not obvious that the combine is the most competent technology for many grain areas in the USSR. Perhaps if these areas had adequate facilities for drying and storing grain the combine

would be an efficient technology, but such facilities are still absent and require a substantial capital investment.

The lack of balance in mechanization (not only in the 1930s) is illustrated by the emphasis on a few items—tractors and combines—and not upon a full line of farm equipment that would take advantage of the labor-saving potential of the tractors. There must be a rational approach to mechanization; it is simply not enough to produce a few hundred thousand machines in limited sizes and varieties. Central planning has not been an adequate substitute for the market in achieving efficient mechanization of agriculture.

Perhaps the main reasons why agriculture in the socialized economies has not achieved a level of modernization comparable to that achieved in the Western industrial nations have been institutional and policy-related. In most socialized agriculture the incentive structure has not supported the rapid adoption of new and efficient methods of production. One important factor has been the general lack of independent research institutions in most centrally planned economies. This failure was most evident in the support received by such incompetents as Lysenko and Williams, and in the victory of foolishness over sanity as in the official support of the corn program and deep plowing in the Soviet Union.

My answer to the question: "Did collectivization of agriculture contribute to the industrialization of the USSR during the 1930s?" is in the negative. Had more rational agricultural policies been followed, there would not have been the enormous loss of human and physical capital. Agriculture would have contributed much more to the national income and would have made possible a more adequate food supply for the urban population, as well as an even larger volume for export. My answer to the question: "Did Stalin's policies transfer resources from the rural to the urban sector, including the industrial sector?" is in the affirmative. But an affirmative answer to the second question is in no way inconsistent with a negative answer to the first.

The vast majority of the Soviet population was exploited to pay for the industrialization. Clearly the farm population had lower incomes in the late 1930s than in the late 1920s. According to Janet Chapman's careful work, the level of private consumption of the urban population declined slightly between 1928 and 1940, while total consumption including communal consumption increased slightly (Chapman 1963, p. 238). Urban housing space per capita fell by more than 20 percent to 4.5 square meters per capita, which quite astoundingly was a little below the 1952 Chinese urban level. Only a small minority of the Soviet population gained in terms of personal consumption during the 1930s. Nearly everyone paid for the industrialization drive. Many people lost their freedom on being sent to the Gulag, or lost their lives in Stalin's purges. As is well known, the drive, with its emphasis upon capital goods, was not designed to provide short-term rewards in the form of substantial increases in consumption or housing and it did not.

Given what is now known about the performance of Soviet agriculture during the 1930s and during the first decade after World War II, it is puzzling that there remains any doubt that the institutional changes made in agriculture in the late 1920s and early 1930s failed to result in the modernization of agriculture. Furthermore, the enormous loss of human and physical resources (as well as the negative effects of the institutional change) reduced national output and the level of consumption of both rural and urban people during these three decades as well as during the period from 1955 to the present.

The discussion to this point has emphasized the sad experience of collectivization under the ignorant and brutish reign of Stalin in the Soviet Union. It does not speak to either the experience of the Soviet Union after Stalin or to the experience in the East European countries that collectivized their agricultures after World War II.

AGRICULTURAL POLICY: EASTERN EUROPE FROM 1960 TO THE PRESENT

It is not appropriate to discuss developments in the agriculture of Eastern Europe and the Soviet Union with sole or primary emphasis upon collectivization. The agricultural and food policies included many components other than the socialization of agriculture and the formation of collective and state farms. There is a tendency for observers, from the region or outside it, to attribute the shortcomings in agriculture to the structure of the farms. But this is clearly not correct, nor is it very informative. The farms operate within a system of related institutions (input suppliers, marketing and procurement agencies, credit institutions) and policies (output and input prices, wage controls, and procurement regulations). We should have learned from the experience of Polish agriculture in the 1960s and 1970s that having most land in private farms cannot by itself create an efficient and productive agriculture. All the features of the agricultural scene count much more than any one characteristic, even that of private ownership of farms.

We need to recognize that there is not a single model of what constitutes a socialized agriculture or of how a collective farm should be organized, managed, and related to other institutions in the economy. Unfortunately for the people (both rural and urban) of the USSR and Eastern Europe, the model that was followed was the one created by Stalin. One can devise many other models that would have had very different consequences if implemented. As I have argued elsewhere, there exist several models for socialized agriculture that could avoid or minimize most of the disincentives of the Stalinist model, as well as the errors in resource allocation that were due to the process by which input, price, and procurement decisions were made (Johnson 1982). As time has passed, there have been some departures from the Stalinist model in the Eastern European economies.

But our purpose is to discuss and evaluate what has been rather than what might have been if Stalin had not had such a major role in determining how agriculture was organized and managed, not only in the USSR but also in Eastern Europe and China.²

RURAL TO URBAN TRANSFERS, 1960 TO THE PRESENT

The years since 1960 are emphasized because that approximate year marked a switch in capital flow and the end of private ownership in most of Eastern Europe and the USSR. In about 1960, a significant shift in the Soviet efforts to extract capital from agriculture occurred.

As background, Karcz (1979, p. 328) describes the period from the end of the war to Stalin's death as follows:

2. What follows draws heavily upon Karl-Eugen Wädekin's (1982) masterful summary of the agrarian policies of Eastern Europe and the USSR.

. . . the contribution of the agricultural sector of the Soviet economy to domestic capital formation in the post-war period was very great indeed. . . The fact remains, however, that failure to recognize the need for a change in policy had consequences so far reaching that they perhaps outweigh even the effects of war damage on the performance of agriculture. In spite of Draconian measures, it proved impossible to regain prewar levels of food marketing per urban head.

As was true in the 1930s, the extraction of capital from agriculture had such strikingly adverse effects upon production that it was probable that national and farm outputs were adversely affected by the exploitation of agriculture to support industrialization for the period from 1946 until Stalin's death in 1952.

The revision of prices in 1953, very soon after Stalin's death, marked the first peace-time effort to reduce the extraction of capital from agriculture. The abolition of the Machine Tractor Stations in 1958, however, was followed by a new effort to extract capital from agriculture through charging unrealistic prices for the machines that farms were forced to accept, and by sharply increasing the prices of certain farm inputs (Karcz 1979, p. 245). This once again put a significant squeeze on farm incomes. Agricultural output grew slowly for the next several years and this slow growth combined with the poor grain crop in 1963 and large grain imports had some role in Khrushchev's removal from office. It remains a mystery why Khrushchev shifted emphasis in his agricultural policy, especially since in 1958 he announced a grandiose plan for agriculture and proclaimed that the Soviet Union was going to overtake the United States in agricultural production by 1965.

The full switch from exploitation to subsidization in the USSR occurred after Khrushchev's downfall. One can assume that Brezhnev had no inkling of the disastrous path on which he started Soviet agriculture and the Soviet economy with the plan for agriculture and food that was instituted in 1965. In that plan, he recognized the need to increase farm prices significantly but he was unwilling to increase retail food prices. This was the beginning of food price subsidies that have come to dominate the Soviet budget and amount to nearly a tenth of national income. The subsidy on food products has been estimated at 2.1 billion rubles³ in 1966 (Trembl 1978, p. 8), increasing to 14.8 billion by 1970, and to a total of about 90 billion rubles for 1989 (when the subsidies to the food processing industries are added to those for the unprofitable farms).⁴ It was also the beginning of a program of large-scale investment in industries supplying farms with inputs, both chemical and mechanical, and a sharp increase in agriculture's share of investment. Agriculture's share of investment was 20 percent for 1961-65, increasing to 27 percent for 1976-85. During the Eleventh Plan Period (1981-85) investment in the agroindustrial complex accounted for approximately a third of national investment. The subsidies and investment were implemented through large flows from the budget and the banking sector that were not offset by taxes or adequate savings. Consequently,

3. A billion is 1,000 million.

4. There have been other large subsidies to agriculture through debt restructuring and cancellations that occurred in 1982 and 1989.

since the mid-1960s agriculture has been a net recipient of resources and has contributed more to macroeconomic imbalance than to growth.

The year 1960 has been used as the starting point for the evaluation of socialized agriculture for Eastern Europe because by then all private agriculture had been virtually eliminated except in Poland and Yugoslavia (Wädekin 1982, pp. 63–64). Attempts at collectivization were made in the late 1940s and the early 1950s, but in the political relaxation that followed Stalin's death, the campaigns were held in abeyance. In 1956 events in Poland and Hungary caused other countries in the region to move again cautiously toward collectivization in agriculture. The process was completed between 1958 and 1962. Thus data for 1960 can be used as indicative of the transition from private to socialized agriculture.

Wädekin (1982) concluded that there has not been a net transfer of resources from agriculture to industry in Eastern Europe and the USSR since 1960. His two tests, which are reasonable, involve two comparisons: (a) agriculture's contribution to net material product with its share of capital stock and investment in the economy (table 1-1), and (b) the ratio of the average product of labor in agriculture to that in the rest of the economy, with the ratio of wages in agriculture to the wages in the rest of the economy (table 1-2).

INVESTMENT AND CAPITAL TRANSFER

What was the direction of the capital transfer that occurred after 1960? Table 1-1 presents Wädekin's data comparing agriculture's share of investment with its share of national income for three periods, starting with 1960. The data indicate that in most years agriculture's share of national investment exceeds its share of national income. In the USSR there was a decline in agriculture's share of national income while the share of investment increased over the period. In the GDR, agriculture's share of national income fell significantly while the share of investment remained more or less unchanged. In Czechoslovakia the share of investment fell early in the period, as did the share of national income, but later the share of national income fell while the share of investment increased. Hungary and Poland each had a substantial decline in agriculture's share of national income but no decline in the share of investment.

There could be a net transfer from agriculture, even if agriculture's share of investment was greater than its share of national income, if farm prices and income were significantly depressed by government price policy. However, there is no evidence that this occurred. Wädekin's data, included in table 1-2, show that in the late 1970s the relative wage in agriculture was much higher than its relative labor productivity. In the USSR and Hungary, for example, the relative labor productivities in agriculture were 52 percent; the relative wages were 81 percent in the USSR and 98 percent in Hungary. In Czechoslovakia relative labor productivity was 40 percent and the relative wage was 94 percent. In each of the countries with socialized agriculture the relative wages of agricultural workers increased significantly between 1960 and 1978 and this was true whether or not relative labor productivity increased. While there is undoubtedly some lack of comparability between the average net labor products in agriculture and the rest of the economy, it would be quite remarkable if the downward bias in the measure of agricultural labor productivity was in excess of 10 percent. Including land at some reasonable value, agriculture is probably more capital intensive than the rest of the

Table 1-1. Agriculture's Contribution to Net Material Product and Share of Gross Productive Investment in Central and Eastern Europe, Selected Periods (percent)

Country	1960		1970		1975-77	
	Agriculture's Share of Total National		Agriculture's Share of Total National		Agriculture's Share of Total National	
	Net Material Product	Gross Productive Investment	Net Material Product	Gross Productive Investment	Net Material Product	Gross Productive Investment
USSR	20.7	20	22.0	26	17.2	28
Albania	44.4	15	34.5	16	—	—
Yugoslavia ^a	25.0	23	18.3	12	15.0	6
Romania	34.9	26	19.1	20	17.5	17
Bulgaria	32.2	40	22.6	21	20.5	19
Poland	25.8	19	17.3	22	15.3	20
Hungary	30.8	20	17.8	29	16.1	23
Czechoslovakia	15.2	23	10.5	15	8.5	17
GDR	18.0	15	12.9	16	10.2	14

— Not available.

Note: Generally includes forestry as well as agriculture. There are numerous qualifications to the estimates; see cited source.

a. Gross Productive Investment data rounded from cited source.

Source: Wädekin 1982, pp. 109, 112.

Table 1-2. Relative Labor Productivity (A) and Relative Wages (B) in Central and Eastern Europe and the USSR, Selected Years

Country	1960		1975-77	1978	1981-85	1985
	A ^a	B ^b	A ^a	B ^b	A ^a	B ^b
USSR	31	60	52	81	46	96
Yugoslavia	25	78 ^c	28 ^d	100	—	—
Romania	22	82	31	99	47	97
Bulgaria	30	93	55	96	58	86
Poland	36	74	33	101	51	100
Hungary	54	88	52	98	77	96
Czechoslovakia	41	77	40	94	44	101
GDR	86	79	70	96	61	—

— Not available.

Note: The data for the 1980s are not strictly comparable to those for the earlier years, but the differences seem to fall within a range of 5 percentage points.

a. Net labor productivity in agriculture and forestry as a percentage of net labor productivity and productive sectors of the economy.

b. Agricultural wages as a percentage of wages in nonagricultural sectors. Wage data are for state-owned farms only.

c. 1963. Including fishery; all socialist farms.

d. 1977. Including fishery; all socialist farms.

Source: Wädekin 1982, p. 174. Data for 1981-85 and 1985 are from Alexandratos 1990, p. 159.

economy in these countries. Another source included in table 1-2 indicates that the relationship between relative productivity and wages continued into the 1980s.

The conclusion that since 1960 agriculture has not been a source of capital transfer to industry in the USSR and Eastern Europe seems well-founded. There has not been a direct transfer through the allocation of investment nor has there been a net transfer through the pricing of agricultural outputs and inputs. The latter type of transfer has been precluded by the discrepancy between the ratio of average net labor productivity and wage rates in agriculture and nonagriculture. Thus the creation of socialist agricultures in Eastern Europe has not been a source of funds to support the development of industry.

COLLECTIVIZATION, PRODUCTIVITY, AND EFFICIENCY

Earlier in this paper, it was noted that one of the objectives of collectivization was to achieve modernization of agriculture. Modernization may not be the best term to use to reflect whether agriculture has been a source of economic growth and development in these economies. In fact, modernization as such is not the appropriate framework for considering how well agriculture has performed. A state farm may be clearly at the technological frontier yet from an economic standpoint still be a failure in the sense that it does not provide a reasonable return on its capital.

Agriculture can contribute to economic development in several ways. The three most important ways are through releasing labor, increasing agricultural output at a rate that at least approaches the growth in demand, and achieving the prior two while supplying food at a constant or declining real price. The contribution to development is made possible through improvements in factor productivity that equal or approach the increases that occur in the rest of the economy. The transfer of capital to the nonfarm economy is not included because for the period of time under consideration, such a transfer did not occur in Eastern Europe.

YIELD LEVELS AND PRODUCTIVITY

Should we look at comparative yield levels and yield trends as indicators of the improvements in productivity in socialized agriculture? There are real difficulties in relying upon such data. First, we need more accurate data than we have concerning yield levels prior to World War II in Eastern Europe if we are accurately to depict the effects of agricultural policies upon the yields over time. Second, even if we could find areas in Western Europe that had climatic and soil conditions similar to those in Eastern Europe, it would not be appropriate to make direct comparisons between the yields of crops in the two regions. The yields in Western Europe are everywhere influenced by real prices that are well above the prices that would prevail under free or liberal trade; consequently the yields are above an economic optimum. If grain yields were lower in the GDR than in the FRG, this is not proof of lower resource productivity in the GDR. In each place, farmers could have been responding to the economic incentives that exist and the economic incentives in FRG undoubtedly called for greater application of inputs than would be economically advantageous or even possible in the GDR. Thus the discussion of what has happened to yields over the past two decades or more makes no inferences concerning efficiency or productivity.

Grain Yields. In spite of the disclaimers in the previous paragraph, this paper presents some information on the yield changes for wheat from 1950 to 1986–88 (table 1-3). The growth rates for wheat, which is an important crop in each of the countries, are very respectable. Because data supplied for Romania are highly questionable, the country is not included. The lowest growth rate was 2.0 percent in the GDR, which had the highest level of wheat yields in 1950. The highest growth rates were 3.2 in Bulgaria and 3.1 in Hungary. Poland, with most of its land controlled by family farms, had a growth rate of 2.8 percent. In the USSR the growth rate was 3.1 percent. Over the same period, wheat yields in the United States increased at an annual rate of 2.9 percent, well within the range of the experience in Eastern Europe. The yield growth rates for three Western European countries also appear in table 1-3. West Germany and France at 4.1 and 5.0 percent, respectively, had higher average growth rates than any East European country. However, Italy had an annual growth rate of 2.7 percent, not very different from Eastern Europe.

Table 1-3. Annual Rates of Growth of Wheat Yields in Central and Eastern Europe, and selected other countries 1950–88 (percent)

Country	Compound Annual Rate of Growth
USSR	3.1
Bulgaria	3.2
Czechoslovakia	2.7
GDR	2.0
Hungary	3.1
Poland	2.8
FRG	4.1
France	5.0
Italy	2.7
United States	2.9

Source: United States Department of Agriculture.

Milk Production. While grain yields are a function of soil and climate, these factors are relatively unimportant in determining the amount of milk produced per cow. Milk production per cow is a function of research, infrastructure, enterprise organization, and incentives. Table 1-4 includes milk yields per cow for Eastern Europe and the USSR and four other countries. Starting from a lower level in 1961–65, Eastern European countries generally had a faster rate of growth of milk yields than three of the four comparison countries. Milk yields were higher by about 10 percent in 1987. The highest yields in Eastern Europe in 1987 are somewhat below the yields in three of the comparison countries in 1977. This comparison suggests that the countries were more than a decade behind the more advanced dairy producers.

But as in the case of grain yields, not too much should be made of the milk yield comparisons in terms of what they tell us about efficiency of production. The only exception to this is the USSR where milk yields have increased at a snail's pace over the past quarter century. Perhaps even more striking and unusual than the slow, long-run growth of milk yields

Table 1-4. Milk Output Per Cow in Central and Eastern Europe and Selected Other Countries, Selected Periods (kilograms per year)

<i>Country</i>	<i>1961-65</i>	<i>1979-81</i>	<i>1990</i>
Bulgaria	1,499	2,638	3,521
Czechoslovakia	1,900	3,140	3,940
Hungary	2,257	3,727	5,082
Poland	2,146	2,778	3,246
Yugoslavia	1,157	1,629	1,768
USSR	1,713	2,095	2,607
France	2,552	2,634	2,945
FRG	3,517	4,479	4,962
Netherlands	4,183	5,025	6,050
United States	3,519	5,377	6,642

Source: FAO, *Production* 1991, 1976.

was that milk yields actually declined during the late 1970s and early 1980s and did not recover to the 1977 level until 1984 or 1985.

RELEASING LABOR TO THE REST OF THE ECONOMY

Because of the problems of accurately measuring real per capita incomes in Eastern Europe, it is difficult to say whether the organization of agriculture has significantly influenced either the rate of decline of the agricultural labor force or the current percentage of the national labor force engaged in agriculture. In making broad comparisons, two good indicators of relative levels of real per capita incomes are the percentage of income or personal expenditures spent on food and the percentage of the labor force engaged in agriculture.

Incomes. It is not possible to have much confidence in comparisons between Eastern Europe and other countries that depend upon relative levels of per capita income. This point was brought out forcefully by *The Economist* (March 10, 1990, p.71) when it showed the wide range in the estimates of GDP per capita for the Eastern European countries. For example, per capita GDP estimates from ten studies ranged from \$4,000⁵ to almost \$13,000 for the GDR, while for the Soviet Union the estimates ranged from less than \$2,000 to as much as \$9,000. Thus the conclusions that one draws from comparisons of the labor force engaged in agriculture and per capita incomes will depend upon which set of per capita incomes is used. If the high estimates presented in some sources are used, the conclusions reached differ substantially from what one can reasonably conclude from the University of Pennsylvania data in table 1-5.

Labor Force and Employment. Compared with other middle-income developing countries, Central and Eastern European states have agricultural employment shares not far from what one would expect given their per capita incomes. With approximately 20 percent of its

5. Unless stated otherwise, all dollar amounts are current U.S. dollars.

labor force engaged in agriculture—and this is an underestimate since this figure gives little or no weight to the employment on private plots—the USSR may be compared with Chile (14.3 percent employed in agriculture), Portugal (19.9 percent), and Brazil (27.6 percent)(table 1-5). The per capita income of the USSR is estimated at \$5,546 while the others have, respectively, per capita incomes of \$4,194 and \$4,723 and \$3,924.

Table 1-5. *Agriculture's Share of National Employment, 1987, and Estimated Per Capita Incomes, 1985*

Country	Agriculture's Share of Total Labor Force 1987 (percent)	Per Capita Income 1985 (U.S. dollars)
USSR	20.0	5,546
Bulgaria	20.0	4,516
Czechoslovakia	12.0	6,558
GDR	10.2	7,721
Hungary	18.4	4,481
Poland	29.1	3,808
Chile	14.3	4,194
Brazil	27.6	3,924
Portugal	19.9	4,723
Italy	9.3	10,804
France	6.7	11,883
United States	2.8	16,604

Source: Labor force data from FAO 1988, table 3. For non-centrally planned economies, data are for economically active population. Data for CPE countries (except USSR) from Cochrane and Lambert 1989, p. 256. USSR data from Alexandratos 1990, pp. 30-31. Per capita income data is from Summers and Heston 1990.

Within the former USSR, employment in the agricultural sectors of the more developed (western) states approximates that of Central and Eastern Europe, although income levels are substantially lower. In the Caucasus and Central Asia, incomes are lower still and agricultural employment as a share of total employment is higher than in other developing countries. Socialist agriculture does not appear to have released more or less labor to the rest of the economy. Again, the unreliability of employment and income figures should be kept in mind.

Inefficiency in the use of resources could cover inordinately high wages for low labor productivity in the former USSR. Finally, there is the simple fact of restricted labor mobility, which could go a long way toward explaining excess labor in agricultural employment.

Food Expenditures. As indicated above, a reasonably good indicator of the real per capita incomes of countries is the percentage of income or consumption expenditures devoted to food. It follows that one measure of the efficiency effects of collectivization and the other agricultural policies followed in Eastern Europe and the USSR would be whether the percentage of income spent on food was higher than what one would expect given the level of per capita incomes or expenditures.

Two factors have inhibited research into these relationships. One has already been indicated—the great uncertainty about the levels of per capita incomes of the countries in the region. But another is even more difficult to surmount, namely that price distortions have significantly influenced consumer expenditure decisions. In each of the countries, as of the mid-1980s there were substantial food price subsidies that meant that consumers were not faced with the actual costs incurred in putting the food in the retail store. In the Soviet Union in the mid-1980s, the price of beef in the state stores was approximately half of the cost to the state. But it was not only distortion in the prices of food that affected consumer decisions. There were two other major areas of consumption that were heavily subsidized in the centrally planned economies, namely urban housing and medical care. A comparison of data shows that households in the countries of Western Europe allocated approximately 20 percentage points more of their expenditure to medical care and housing than was the case in the USSR or Eastern Europe. For example, in the centrally planned economies households allocated about 10 percent of their expenditures to housing (including utilities) and medical care while in Western Europe about 30 percent was allocated.

There seems to be no way of reasonably accounting for the effects of these two types of price distortions as well as the added factor that, at least in some countries, food was either formally or informally rationed. The comparisons were further complicated by the low quality and the limited amount of housing space available in urban areas. Families did not spend much on housing, but they did not get much either. Westerners have the general view that urban residents of China live under very crowded conditions; by our standards they do. But the amount of living space per capita in urban households that were included in the annual household surveys of income and expenditures in China in 1987 was 8.5 square meters. In the USSR the amount of living space per capita in urban areas was 10.2 square meters in 1985 (Alexeev 1987, p. 284) Given that the income elasticity of demand for housing is approximately unity, it seems obvious that Soviet planners have not provided the amount of housing that would have met market demand if there were a market for housing in which supply equalled demand. This point only indicates how difficult it would be to make a reasonable comparison between food expenditures in the Soviet Union and in any Western economy and use that comparison to provide an approximation of the differences in per capita incomes.

INCREASING AGRICULTURAL OUTPUT

For Eastern Europe and the USSR in general, growth rates of agricultural output declined after 1960, with the lowest rates of decline in the 1960s and the highest in the 1980s. There were exceptions to this pattern, particularly the GDR and, to a lesser degree, Poland. The strongest adherent to the pattern was the USSR (table 1-6).

Given the percentage of national investment devoted to agriculture, the relatively high payment to labor, and the great increase in imports of agricultural products during the 1970s and 1980s, the record of output growth can be accurately described as mediocre. However, the quantities of food produced in each of the countries were sufficient to provide adequate nutrition for the populations. Whatever problems may have existed in retail availability of food were due to low price policies and inefficiencies in the processing and distribution systems rather than to inadequate supply at the farm level.

Table 1-6. Annual Rates of Growth of Gross Agricultural Output, Selected Periods (percent)

Country	1961-65, 1969-71	1971-80	1981-88
Bulgaria	3.4	1.1	0.4
Czechoslovakia	3.0	2.6	1.7
GDR	1.6	1.7	2.4
Hungary	3.5	4.1	0.8
Poland	1.8	0.4	2.4
Yugoslavia	3.1	2.9	0.6
USSR	3.9	1.2	1.0

Source: U.S. Department of Agriculture, 1990a and 1990b.

The substantial increase in grain imports during the 1970s contributed significantly to output growth during that decade, since the output measure is that of gross agricultural output and imports of feed are not netted out. For the region (including the USSR) net grain imports increased from 3.5 million tons in 1969/70-1971/72 to 44 million tons in 1979/80 (Johnson 1981, p.184). The largest increases occurred in Poland and the USSR.

A significant part of the increase in the hard currency debt of the region was used to pay for the increased imports of agricultural products. Much of the increase in the imports and domestic production of feeds was translated into a remarkable increase in per capita meat consumption between 1965 and 1979—an increase of 24 kilograms or 56 percent for Eastern Europe. Even in the USSR, per capita consumption increased by 37 percent, but at 56 kilograms in 1979, it lagged significantly behind per capita meat consumption in Czechoslovakia, the GDR, Hungary and Poland. Consumption levels, even after some downward adjustment for comparability, are higher than those of several Western European countries with substantially higher per capita incomes, such as Norway and Sweden, and about the same as in the United Kingdom and Denmark.

The growth in demand for meat during the 1970s was a consequence of sustained increases in both money and real wages and the low and constant nominal prices for meat. Meat prices increased very little during the 1960s and 1970s, even with the 1963 increase in the USSR that may have been partially responsible for Khrushchev's downfall. Apparently, there was significant political pressure to expand meat production to keep pace with the growth in demand, and during the 1970s the effort was quite successful. However, the growth in meat consumption during the 1980s was much slower than in the previous decade; in Poland per capita consumption fell, and in Czechoslovakia there was no increase.

It is highly probable that the meat price policy in force distorted the consumption of food compared to what would have prevailed if prices had more accurately reflected the costs of the various foods. Because of the meat price policy and the limited investment in food, transportation, processing, refrigeration and distribution networks, consumer supply of fresh, canned and frozen fruits and vegetables was restricted and distorted.

CONCLUSION

Collectivized agriculture in Eastern Europe has not contributed to economic development through a net transfer of resources from agriculture to the rest of the economy. This statement has two quite different historical implications. The first is that where there was exploitation of farm people to create a transfer of resources to the industrial sector, as occurred in the USSR during the 1930s, the methods used to achieve the transfer had such negative consequences to agricultural output and to the national income produced by agriculture that total national income was adversely affected. Urban people and wage workers suffered the consequences of a lower level of consumption of food than would have been available with other policies. The second implication is that in Eastern Europe there was not a transfer of resources from agriculture to the rest of the economy after 1960, when collectivization was completed, except in Poland and Yugoslavia. Instead the evidence is quite clear that collectivization was associated with transfers to agriculture in the form of investment funds and in payments of wages that were high compared to the productivity of labor in agriculture relative to the rest of the economy.

Collectivization did not contribute to a more rapid and larger transfer of labor to the nonfarm sector than has occurred in market-oriented economies. In fact, the actual collectivization almost certainly slowed down the transfer, since the share of labor in national employment currently in the USSR and Eastern Europe is either greater than one would expect given the per capita income levels or is no lower than one would expect.

The evidence is firm that collectivization has resulted in high-cost agriculture. Behind the high cost have been both the level of investment required to achieve some output growth (and release some labor to the rest of the economy), and the slow growth of factor productivity. For a variety of reasons, the growth of total factor productivity in the agricultures of the USSR and Eastern Europe has been modest, especially during the past 15 years.

The actual consequences of collectivization have been adverse and have been much more adverse than they need have been. Unfortunately, Stalin had enormous influence—through the harshness with which collectivization occurred and through his ideas, which determined the nature of institutions created in all of the centrally planned economies. If collectivization had been carried out along other lines, without the emphasis upon central planning and by utilization of market forces, with each collective unit functioning to maximize the interests of its members, history would have been much different. It is not that collectivized agriculture would have been superior to family farms in terms of efficiency, production growth, and satisfaction of the farm families, but the differences between these two forms of production could have been far, far smaller.

REFERENCES

- Alexandratos, Nikos. 1990. *Eastern Agriculture: Policy Issues and Options*. London: Belkamen Press.
- Alexeev, Michael U. 1987. "Soviet Residential Housing: Will the Acute Problem be Solved?" In *Gorbachev's Economic Plans*. Joint Economic Committee, Congress of the United States. Vol. 2. Washington, D.C.: Government Printing Office.

- Chapman, Janet. 1963. "Consumption." In Abram Bergson and Simon Kuznets, eds., *Economic Trends in the Soviet Union*. Cambridge, Mass.: Harvard University Press.
- FAO. Annual volumes. *Production Yearbook*. Rome.
- Cochrane, Nancy J., and Miles J. Lambert. 1989. "East European Agriculture: Pressures for Reform in the 1980s." In *Pressures for Reform in East European Economies*. Joint Economic Committee, Congress of the United States. Washington, D.C.: Government Printing Office.
- Johnson, D. Gale. 1961. "Soviet Agriculture." Paper presented at the conference on Economics of Soviet Industrialization, May 6–8, Princeton, New Jersey.
- _____. 1981. "Food and Agriculture of the Centrally Planned Economies: Implications for the World Food System." In William Fellner, ed., *Essays in Contemporary Economic Problems: Demand, Productivity and Population*. Washington, D.C.: American Enterprise Institute.
- _____. 1982. "Agricultural Organization and Management." In Abram Bergson and Herbert S. Levine, eds., *The Soviet Economy: Toward the Year 2000*. London: George Allen & Unwin.
- Johnson, D. Gale, and Arcadius Kahan. 1959. "Soviet Agriculture Structure and Growth." In *Comparisons of the United States and Soviet Economies*. Joint Economic Committee Congress of the United States. Part 1. Washington, D.C.: Government Printing Office.
- Karcz, Jerzy F. 1979. *The Economics of Communist Agriculture: Selected Papers*. Studies in East European and Soviet Planning, Development and Trade, no. 25. Bloomington, Indiana: International Development Institute.
- Medvedev, Zhores A. 1987. *Soviet Agriculture*. New York: W.W. Norton & Company.
- Sumners, Robert, and Alan Heston. 1990. "The Penn World Table (Mark 5): An Expanded Set of International Comparisons, 1950–1987." Paper presented at the National Bureau of Economic Research Conference on Economic Growth, April 12–14, Vail, Colorado.
- Treml, Vladimir G. 1987. *Agricultural Subsidies in the Soviet Union*. Foreign Economic Report no. 15. Bureau of the Census, U.S. Department of Commerce.
- Wädekin, Karl-Eugen. 1982. *Agrarian Policies in Communist Europe: A Critical Introduction*. Totowa, New Jersey: Allanheld, Osnum & Co.

Wheatcroft, S. G., R. W. Davies, and J. M. Cooper. 1986. "Soviet Industrialization Reconsidered: Some Preliminary Conclusions About Economic Development Between 1926 and 1941." *The Economic History Review* 39(2) (second series), pp. 264–94.

U.S. Department of Agriculture, Economic Research Service. 1990a. *World Agricultural Trends and Indicators, 1970–88*. Statistical Bulletin no. 78.

_____. 1990b. *Indices of Agricultural and Food Production for Europe and the USSR*. Statistical Bulletin no. 635.

INCENTIVES, ORGANIZATIONAL STRUCTURES, AND CONTRACTUAL CHOICE IN THE REFORM OF SOCIALIST AGRICULTURE

*Joseph E. Stiglitz**

The increase in agricultural productivity within the major market economies is little short of an economic miracle. The Malthusian prediction of population outrunning food supply has not only been contradicted, but a dwindling fraction of the population has produced an ever increasing abundance of food. The problem plaguing many of the Western countries is agricultural surpluses, not food shortages.

By the same token, increases in productivity in socialist and formerly socialist economies have not kept pace with the increases in productivity in the more advanced market economies. Some of the starkest evidence of poor performance under socialism is in the agricultural sector.

Not surprisingly, many of the socialist and formerly socialist economies, seeing the marked differences in economic performance, are ready to embrace the market system. Yet one of the remarkable characteristics of agriculture within the major advanced economies—in particular, the United States, the EC, and Japan—is the pervasiveness of government involvement. There is a certain irony in the standard Western economist's advice to rely on the market. This advice is of the form "Do as we say, not as we do."

The transition to a market economy in agriculture, as in the rest of the economy, involves not a withering away of the state, but a fundamental redefinition of its role. The central arguments of this chapter are that the state does have a potentially positive role to play as an actor in the agricultural market economy, that the activities in which governments engage in agriculture in developed market economies frequently reduce rather than augment general welfare, and that understanding the political and economic forces that have given rise to the inefficient agricultural policies in the West may enable the economies in transition to design a more rational economic system. While most of the discussion focuses on general principles, the particular problems raised by the transition process itself will be examined.

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**THE ROLE OF GOVERNMENT IN A MARKET ECONOMY:
INSIGHTS FROM THE ECONOMICS OF INFORMATION**

The paradigm that dominated the economics profession until recently provided poor guidance on the appropriate role of government. Debreu and Arrow's Fundamental Theorems of Welfare Economics (i.e. "any Pareto-efficient allocation of resources can be attained through the market mechanism," and "every competitive equilibrium is efficient")¹ leave little constructive activity for government except to oversee lump sum transfers—to achieve a more desirable distribution of income than the market would—and correct market failures. We now know that Debreu and Arrow's great achievement was to find the singular conditions under which Adam Smith's invisible hand leads the economy to an efficient allocation of resources. The validity of the first Fundamental Theorem on Pareto efficiency (and its implied role for government) rests on very restrictive assumptions. The set of markets, including those for risk and future transactions, must be complete. Information must be perfect and costlessly available to all agents. When these assumptions do not hold, it is possible to demonstrate (at least in the controlled world of economic theory) that the market does not efficiently determine what should be produced and how. Issues of selection, incentives, and decisionmaking become important.

These "market failures" go beyond, but are intertwined with, the more standard market failures associated with externalities, public goods, and imperfect competition. Imperfect and costly information, for instance, frequently gives rise to imperfect competition. Informational imperfections give rise to imperfect capital markets. The role of government is, however, not always clear. For instance, capital market imperfections give rise to a demand for government intervention, but government is not necessarily at an informational advantage relative to private lenders.

The new imperfect information-incomplete markets paradigm has other important implications for policies of the transition. First, economic organization, including contractual arrangements, matters; and there are a host of legal provisions, such as limited liability, which affect the nature and form of organizational and contractual arrangements. Our knowledge is not yet so complete that we can specify an optimal contractual arrangement, or an optimal organizational design—and perhaps it never will be. Besides, the desirability of a particular contractual arrangement or organizational design may depend on the economic and social environment, which undoubtedly will change over time. We can identify some characteristics of organizational structure or contractual arrangements that are more likely to be conducive to high productivity, or increased welfare more generally. We can also identify characteristics of the legal environment that are more likely to lead to more efficient institutional arrangements within the private sector.

Secondly, income (wealth) distribution matters; it matters partly because it affects the kinds of contractual arrangements that prevail. Sharecropping, which may result in attenuated incentives, is more likely to arise when there is greater inequality in wealth. Inequality in land ownership may also result in inefficient allocation of capital.

¹ *Editors' Note:* An allocation of resources is said to be Pareto efficient if there exists no other allocation that makes all individuals at least as well off and at least one individual better off than initially (i.e., an allocation that improves at least one individual's welfare while not diminishing the welfare of others).

The central message of the new information-incomplete markets paradigm is that advice to "adopt a market system" is too simplistic. Credit and risk markets in the most advanced countries work imperfectly—and there is every reason to believe that they will be particularly imperfect in the near future in the countries in transition. To pretend that markets work perfectly, and that government should simply ignore these market failures, is certainly not intellectually sound, and probably not politically sound. Governments will be called upon to address these and other market failures, to establish a legal framework within which private institutions can function, and to privatize land and state enterprises. How governments respond to these calls will have much to do with their economic success.

Problems of imperfect information and incomplete risk markets are particularly important in agriculture. Some of the earliest work on the economics of imperfect information and incomplete markets was developed through analysis of contractual relations in agriculture. Agricultural production incorporates time lags inherent in biological processes, and is subject to the random influence of weather, disease, and pests. Producers can trade away some price risk on futures markets, but farmers are typically at a marked information disadvantage relative to the large trading companies. Even in the United States, farmers make relatively little use of futures markets; in grain markets, for instance, there are five large trading companies that dominate the market and their resources give them a great informational advantage. While informational asymmetries limit the ability to insure against price risk, yield risk cannot be fully covered without attenuating incentives. Equity markets are also imperfect and (with few exceptions) absent in agriculture, and are likely to remain so. The ability of farmers to share risk is extremely limited.

The weakness of the paradigm of perfectly competitive markets with perfect information is evident in agriculture. Producers of perishable products, such as milk, cannot search long for the best price for their product; the imperfect competition that characterizes most markets is particularly pronounced in much of the agricultural processing industry.

Despite these problems, the performance of agriculture in the market economies has been markedly better than that in centrally planned economies. Centrally planned agriculture has, with few but important exceptions, combined collective production at the level of the firm with constraints on interfirm transactions mediated through markets. In both the organization of the firm and the surrogates for the market, the institutions of socialist agriculture have been poorly adapted to incorporate the importance of information and incentives. The only success has been to reduce much of the risk faced by the typical farmer—but at a huge cost in economic efficiency.

Theoretical consideration of the role of information suggests agriculture under central planning will perform poorly. Collective production with costly and imperfect monitoring of individual performance engenders poor incentives, particularly in circumstances where punishments for shirking are limited. And shirking is not the only, and perhaps even the central problem: efficiency requires individual initiative, particularly to respond to changing weather and technology. Collective production as practiced in the command economies provided no incentive for the requisite individual initiative. Administrative hierarchical relationships between farm managers, input suppliers, and processors, plus the delegation of authority over production to political overseers removed from production, means that essential agricultural information is inefficiently processed. The institutional organization of centrally planned agriculture, both at

the level of the firm and in interfirm transactions, fails grandly and fundamentally because information is costly.

These problems are in addition to some of the other well-known deficiencies of public production. Soft budget constraints replace the hard budget constraints enforced by the threat of bankruptcy; restrictions on incentives and salary schedules, as well as civil service restrictions ensuring job security, place public sector enterprises at a marked disadvantage relative to private sector firms, and contribute to the inefficiencies frequently found in those enterprises. Both organizational and individual incentives are attenuated.

While there is a consensus within the countries in transition that the government should not play the central role in production that it has played in the past, the basic issue remains: what *should* be the role of government? It is apparent that in almost all countries, governments have vital roles. Some of these roles we take for granted: the government protects property rights, enforces contractual obligations (defining what are permissible contractual arrangements and specifying how contracts are to be interpreted in the frequently arising cases of ambiguities), and determines (in terms of civil and criminal penalties) what happens in the event of a failure of one party to live up to its contractual obligations. As we shall see, bankruptcy law (defining the limits of liability), contract law, and competition law (preserving, albeit imperfectly, competition within the economy) are all important in determining how market economies function. In one way or another, governments both during the transition, as well as in the longer run, must perform these roles. They may, of course, perform these roles well or badly. Specific issues related to redefinition and redistribution of property rights, the legal structure, and competition policy are developed below. But there are more controversial roles for the government, such as stabilizing agricultural prices, absorbing risk, and providing credit, and these will also be addressed.

INFORMATION ECONOMICS AND THE AGRICULTURAL TRANSITION

The central issues in determining economic success within the rural sector (as in other sectors of the economy) are the total incentives facing those in the sector, and the availability of resources and knowledge.

One can, in principle, design effective incentive structures without private ownership;² and one can have private ownership with taxes (explicit or implicit, for example through controlled prices) that effectively attenuate all incentives. In Poland, for example, private ownership remained significant in the rural sector. Yet agriculture stagnated there as it did in the other socialist economies.

Evidence of the higher productivity of private plots indicates the importance of incentives, but is less convincing on the role of private property. It is obvious that if individuals can allocate time in two ways, one of which yields a high marginal (private) return, and another of which yields a low marginal (private) return, energies will be directed towards the former. Some have argued not only that energies have been so directed, but so have other resources that really belong to the cooperative or state farms.

² Though some might argue that these incentive structures are tantamount to the assignment of ownership.

The net returns to effort on privately owned land depend on the after tax returns—a function of the tax rate,³ prices at which commodities are sold, and with sharecropping, the share that has to go to the landowners. Thus, incentives are equally attenuated by high tax rates, high sharecrop rates, high prices for agricultural inputs, and low producer prices.⁴ From the perspective of the farmer, it makes no difference whether the low prices are a result of, e.g. taxes on consumption of agricultural produce in the urban sector; tariffs on industrial goods, which raise industrial prices, and thus lower the real price of agricultural goods;⁵ or monopsonist pricing of outputs or monopolistic pricing of inputs as a result of imperfect competition in the agricultural supply or processing sectors.

THE REDEFINITION OF PROPERTY RIGHTS

The most fundamental difference between socialist and market economies is public ownership of the means of production, and so it is natural that discussions of the transition to a market economy begin with the problem of privatization and the redefinition of property rights. Central and Eastern European governments are in the process of redefining and redistributing property rights, including ownership of agricultural land and assets. Both the redefinition and the redistribution are important; constraints on exercise of property rights as well as the economic environment in which farmers operate (including the taxes they have to pay and competition among food processors and distributors for the goods that they produce) affect returns to agricultural resources, and thus the value of the agricultural assets.

Private property makes a big difference in long-term incentives, and in the incentives to invest in maintaining and improving the quality of land. There are often a variety of ways by which present output can be increased at the expense of future land productivity. Ensuring that those in the farm sector make the appropriate intertemporal choices is virtually impossible without private property. The farmer obtains the return to actions that enhance the productivity of land (or do not decrease it) in the form of higher productivity in later years, and more importantly, in higher prices when it comes time for the land to be sold. If land cannot be sold, then he can appropriate only a fraction of the returns.

Many observing the lack of success of the socialist economies, ascribe their failure to the central institutional feature that distinguishes them from capitalist economies: property rights. But while property rights are important in providing appropriate incentives within the

³ This paper does not discuss taxation of the rural sector. In the years immediately following the Soviet Revolution, there was a widespread view that agriculture should be taxed to provide the funds required for rapid industrialization. The enormous disincentives resulting from the high taxes—and the responses of the agricultural sector—may provide part of the explanation for the policy of collectivization. The debate about the appropriate tax on the rural sector—the size of the urban-rural "scissors"—has reappeared more recently in other socialist economies, including China. For a more extended discussion, see Sah and Stiglitz 1985a, 1985b, and 1992.

⁴ In fact, a central theme of the modern theory of public finance stresses the equivalence (from an analytic perspective) of price policies and tax policies. For example, see Sah and Stiglitz 1992.

⁵ Southern farmers of the United States were at one time worried that an eventual majority of urban dwellers would impose a tax on agricultural exports, and thus imposed a constitutional ban on export levies, not recognizing that equivalent effects could be attained through tariffs on industrial imports.

agricultural sector, by themselves they are insufficient to assure even a reasonable chance of success. The distribution of wealth and land, and other policies (credit, competition) to be discussed in subsequent sections are at least of equal importance.

Recommendation 1. Private ownership should be established early in the reform process. By itself, however, private ownership will not be sufficient to restore a high level of productivity.

THE ORGANIZATION OF AGRICULTURE

Privatizing agriculture is not the only (and in some countries, not even the main) issue in the transition to a market economy. In those countries where agriculture is run as a large-scale enterprise, the ownership of the farm could be vested in the farmers (who become essentially shareholders). Nominally, this is little different from the cooperatives that are important within several of the countries. The fact that cooperatives and state farms function similarly suggests that this change in nominal ownership might not make much difference, though the incentives of the members of the cooperative to monitor the management might be greatly changed if members of the cooperative believed that their dividend payments could be materially affected by the performance of the cooperative.

While there have been successful large farms in the United States and other Western countries, for the most part, the efficient organization of agriculture seems to entail smaller units. Smaller farms reduce the problems of managerial control that seem to far to outweigh limited returns to scale.

Unfortunately, the capital stock that many of the former socialist economies are inheriting may prove an impediment, both to the effective organization of farming and the effective organization of the agribusiness sector (which will be discussed more extensively below).

Returns to scale in agriculture are probably limited, and incentive considerations suggest accordingly that the optimal scale of a farm should be relatively small. Yet tractors and other equipment presently in use may have been designed for large-scale agriculture. Under these circumstances, breaking up large state farms and cooperatives into smaller units presents particularly challenging problems. What may be required is establishing separate enterprises for renting out these large-scale pieces of equipment. The problem remains of how to ensure that such firms do not exercise local monopoly power. Can "neighboring" equipment rental companies provide effective competition? In most cases, the answer to this question is probably yes, although competition may be far from perfect.

Similarly, the inherited capital stock in certain aspects of agricultural processing may limit the effective degree of competition. Whether standard antitrust policy will provide an appropriate remedy or whether more direct government regulation may be required is not clear.

CREDIT AND THE AVAILABILITY OF OTHER RESOURCES

Private property makes a difference beside the provision of incentives. There are important lags in agricultural production. There are expenditures on seeds, fertilizer, and labor in the spring, while output does not occur until later. Much of the enhanced productivity in

agriculture in the more advanced countries is attributed to using more capital, again requiring expenditures considerably before receipts.

Modern agriculture requires capital. The preceding section emphasized that incentives are based on net returns, which must take into account not only the price of output, but the price (and availability) of inputs. A particularly important determinant of whether a farmer can get inputs is whether he can get access to capital. In the United States, government has seen it as part of its responsibility to assist farmers in obtaining capital.

Within the past decade, economists have increasingly recognized that loan (credit, capital) markets are not like ordinary markets of conventional goods and services. A loan entails an exchange of current dollars for a *promise* to pay dollars in future. That promise is often broken. Lenders have to screen different loan applicants to determine who is more likely to repay; lenders also have to monitor the use of funds to ensure that they are used to increase the likelihood of repayment.

As a result of informational imperfections, credit markets often do not seem to function well—we frequently speak of "imperfect capital markets"—and these imperfections give rise to demands for government intervention. For instance, credit markets are often characterized by credit rationing—some individuals simply cannot obtain loans at any interest rate. At times, the market simply refuses to make loans within particular categories. All farmers in some region may have only limited access to credit, in spite of the fact that some are very good risks. Even when they can obtain loans, some groups may have to face high interest rates.

Some of these supposed imperfections reflect real economic costs. Credit rationing and high interest rates are not necessarily the consequence of exploitative money lenders trying to extract their pound of flesh from the hapless borrowers; they *may* be a rational and efficient response to the information problems that are endemic to credit markets. For instance, high interest rates may reflect high default rates or high costs associated with screening and monitoring loans.

At the same time, information imperfection generally gives rise to imperfect competition, so that there may be some scope for lenders to exploit borrowers. Although there have been general theorems proving that under the kinds of conditions prevailing in credit markets, market equilibrium is in general not constrained Pareto-efficient,⁶ we are only now beginning to understand the appropriate kinds of government interventions.

Governments often subsidize credit to agricultural producers. Is this a response to a market failure, or to pressure from those in the agricultural sector for hidden subsidies? Whenever capital is made available at lower than actuarially appropriate rates (taking into account the risks of the loans), there is in effect a subsidy, but one which is hidden at the time it is granted. Only over time, as loans default, does the magnitude of the subsidy become clear.

There is thus a growing consensus that if the government goes where the private market fears to tread, it should do so only cautiously and with safeguards. The government faces the same (sometimes worse) information problems; it is no better a screener of loan applications, and no better a monitor. Worse still, it often faces political pressures. Because they seem hidden, subsidies through the credit system have long been favored in country after country.

⁶ See, for instance, Greenwald and Stiglitz 1986.

Government does have one advantage over private markets—it may be in a better position to enforce loan contracts. The significance of this, and whether the advantage outweighs the abuse that may result from hidden subsidies, would seem problematical for most of the countries in transition.

In short, limited credit and high interest rates often appear as an impediment to development, inhibiting the acquisition of capital necessary for modern agriculture. This seeming market failure often results in pressures for government action. But government intervention providing credit at lower interest rates may not be the appropriate solution.

THE IMPORTANCE OF LIMITING CREDIT SUBSIDIES

Credit poses a double incentive problem. How can appropriate incentives be provided to farmers? And how can appropriate incentives be provided to lenders, particularly when the lender is the government?

It is important to provide appropriate incentives to lenders for several reasons. Unless they screen good from bad applicants, much of the capital will not be well invested. Furthermore, the monitoring of lenders, combined with effective threats to cut off credit if funds are not well spent, provides an important set of incentives to farmers.⁷

Problems in the agricultural sector cannot be isolated from problems elsewhere in the economy. Problems in the credit market show up as problems in the rural sector. Designing appropriate incentive structures for credit institutions is a difficult matter—as the bailout of the savings and loan associations in the United States, estimated to cost the American taxpayers between \$250 billion⁸ and \$500 billion, provides ample evidence. Exploring this question is beyond the scope of this paper.⁹

It should be emphasized, however, that the problem of "soft" budget constraints is more ubiquitous than is sometimes supposed. Kornai (1990) has emphasized the incentive problems arising in socialist economies from soft budget constraints. Government loan programs (and government guarantees of private loan programs) in mixed capitalist economies give financial institutions a kind of soft budget constraint, the ability to draw upon the public treasury in times of need. Switching from a socialist to a market economy will not necessarily eliminate the soft budget constraint.

Moreover, soft budget constraints are like a contagious disease. Soft budget constraints in one part of the economy may give rise to soft budget constraints in other parts: borrowers, knowing that lenders face a soft budget constraint, know that in the event of a default they can call upon the lender to lend them more money. While a loan is, admittedly, not quite as good as a government grant, a loan may enable a manager to pass on a problem that arises during his

⁷ See Stiglitz and Weiss 1983.

⁸ Unless stated otherwise, all dollar amounts are current U.S. dollars. A billion is 1,000 million.

⁹ For a discussion of some of the issues, see Brumbaugh 1988 or Kane 1989. For a discussion in the context of the economies in transition, see Stiglitz (forthcoming) or McKinnon (forthcoming).

tenure to the next manager. Knowing this, his behavior may be very similar to what it would be if there were a soft budget constraint.¹⁰

BANKRUPTCY LAW

Even with seemingly "hard" budget constraints, though, the possibility of default presents problems of incentives. Unless there are severe penalties for default, the borrower cares only about the returns he gets in the states in which he does not default, not how much the lender loses in the states in which he defaults. There will be inappropriate incentives with respect to risk taking.¹¹ Bankruptcy laws determine the magnitude of the penalties for defaulting, and thus are an important component of any economy's incentive structure.

On the other hand, *limited liability*—with its associated limitations on the magnitude of the penalties for default—is essential for the development of any modern capitalist economy. Without limited liability, individuals would in general refuse to provide equity capital to any but their relatives and closest friends (and frequently not even them).¹²

Efforts to protect new private landowners from penalties of default have resulted in restrictions on use of land as collateral for loans. These efforts to protect landowners in fact penalize them by reducing the value of their primary asset, land. Restrictions on the mortgaging of land also greatly impede the necessary restructuring of rural financial intermediaries.

Dilemma 1. Capital is necessary for efficient, modern agriculture. Imperfect and costly information inevitably leads to imperfect capital markets. Market economies frequently respond with government loan programs; but the government usually does not have an information advantage over the private sector, and has some disadvantages.

Dilemma 2. Soft budget constraints including those arising from government guarantees provided for lending institutions may, in effect, give rise to soft budget constraints facing borrowers. But without government guarantees, there may be insufficient credit available.

Dilemma 3. Excessively tough bankruptcy laws may discourage risk taking. Excessively loose bankruptcy laws may encourage excessive risk taking and corporate irresponsibility.

Dilemma 4. Restrictions on the use of land as collateral may impede the ability of farmers to obtain loans, and thus adversely affect the rural sector. Without such restrictions,

¹⁰ The same problem arises, of course, within lending institutions. Lenders have an incentive to lend more funds to a borrower, to extend further credit, rather than precipitating a crisis by insisting on the repayment of a loan. Given the deadweight losses associated with bankruptcy, this may actually be rational. At the same time, the anticipation of the difficulties of "forcing" repayment makes lenders more reluctant to grant credit, and makes the threat of cutting off credit (with its desirable incentive properties) less credible. See Eaton, Gersovitz, and Stiglitz 1986.

¹¹ Within the United States, the savings and loan institutions provide a dramatic illustration of these principles.

¹² For a more extensive discussion of the importance of limited liability, see Greenwald and Stiglitz 1991.

small farmers may borrow excessively, using land as collateral, and in bad years, lose their land, eventually resulting in concentration of land ownership.

LEGAL STRUCTURE

Bankruptcy law is not the only important part of the legal structure that affects economic incentives. An important strand in the recent law and economics literature has stressed the importance of contracts and contract law,¹³ including the enforcement of contracts. Credit markets function much less effectively if loan contracts cannot be enforced. Creditors must then rely on "self-enforcement" mechanisms, the effectiveness of which in turn depends on the existence of rents.¹⁴ Not only the enforcement, but the *timely* enforcement of laws matters. Delays are costly, and if they are sufficiently great, then near total reliance must be placed on self-enforcing mechanisms.

Recommendation 2. Government must adopt "modern" contract statutes, and devise a legal system which fairly, effectively, and quickly enforces contracts.

THE DISTRIBUTION OF WEALTH AND ECONOMIC INCENTIVES

How much a farmer needs to borrow depends on how much wealth he has. Wealth is important for several reasons. The incentive problems briefly described as arising in credit markets are attenuated by the presence of collateral. One of the marked advantages of private property is that it provides individuals with something to lose if they "misbehave". At the same time, incentive (principal/agent) problems¹⁵ arise whenever a farmer does not own his own land.

The more equally distributed wealth is, the better society's incentive structure is likely to be. We have identified two separate incentive problems, one having to do with capital, the other with labor. Older literature argued that inequality might actually be good; since the rich saved a larger fraction of their income than the poor, the greater the inequality in income (or wealth), the greater the savings. If land was highly concentrated, wealthy farmers would have the capital required to finance better production technologies.

Yet this ignores the other, and probably more important, incentive problem: labor. If wealth is unequally distributed, then most laborers do not own their own land. The modern theory of contracts has discussed in detail the consequences of various contractual arrangements

¹³ Particularly since the set of markets is incomplete.

¹⁴ There is a large literature discussing self-enforcing contracts (in which reputation mechanisms are relied upon to ensure contract compliance). In the credit market, see Eaton and Gersovitz 1981 and Eaton, Gersovitz, and Stiglitz 1986. In a more general context, see Klein and Leffler 1981. In general, for contracts to be self-enforcing, there must be rents; the existence of rents requires that competition be limited. For a discussion of how these limitations on competition arise endogenously, see Stiglitz 1989. In these circumstances, the costs of excessive entry, based on misperceptions concerning profitability, are borne not only by the entrants.

¹⁵ *Editors' Note:* Principal-agent problems in economic literature concern how one individual (the principal) can design compensation which motivates another (the agent) to act in the principal's interest.

under which laborers might work land. Rental contracts, while they have good "worker" incentives, have two problems. They force the worker to bear the risk; since the worker seldom has the capital to buy the machines or pay the rent in the beginning of the period, in effect he must borrow funds (either from the landlord or elsewhere), giving rise to an important set of incentive problems within the credit market. Wage contracts have poor worker incentives, and require expensive monitoring. Sharecropping, the common form of land tenancy, greatly attenuates worker incentives—a 50 percent share contract is equivalent to a 50 percent tax rate—and at the same time forces the tenant to bear considerable risk.¹⁶

Formerly socialist economies are in a perhaps unique position of being able to implement an egalitarian land policy, which has the potential for increasing the efficiency of the agriculture sector, by improving workers' incentives and (through the availability of land as collateral) the efficient provision of credit (capital). One problem with land reforms is the expectations to which they give rise. Some individuals are more efficient than others. In a dynamic economy, more land will wind up in the hands of the more efficient farmers. They may well worry, "Won't there be a further land reform, taking away my private property?" As argued earlier, without the sanctity of private property, long-term incentives are greatly attenuated. Thus, land reforms, while they increase equality, threaten the foundations of private property. The formerly socialist economies are in a position of more credibly claiming to determine the appropriate "initial conditions" or "transition rules" while committing in the future to the maintenance of private property rights.¹⁷

More egalitarian wealth distribution and a commitment to democratic processes may themselves provide an effective political commitment to avoid large-scale future interference with private property rights; too many individuals will have a vested interest in maintaining the system of private property rights. The underpricing of securities by the British government in the process of privatization has been rationalized on similar grounds; that is, that it made renationalization politically unpalatable.

Recommendation 3. The privatization of property should be done in such a way as to maintain as much equality as possible. If rights of former land owners are restored, restitution should promote equality in the distribution of wealth. The distributed assets, including land, should be fully tradeable.

¹⁶ Thus, while Stiglitz 1974 showed that sharecropping was locally Pareto efficient, maximizing the landlord's expected utility, given the tenant's expected utility, output is still considerably lower than it would have been with a more egalitarian distribution of wealth. Of course, if information were costless, then share contracts could specify the labor input, and there would accordingly be no attenuation of effort. Although this possibility has received some attention in the theoretical literature (Cheung, 1969), it is probably of limited relevance.

¹⁷ Because the initial distribution of land ownership (however well managed) will not serve the changing interests of economic agents in a dynamic economy, it is important that the property right include the right to buy, sell, and mortgage land. Restrictions on marketability constrain rural capital markets, and moreover, signal ambiguity about fundamental commitment to protection of private property.

COMPETITION POLICY

This paper stresses that incentives in agriculture must be looked at from a broad perspective. Incentives depend on the prices farmers pay for inputs and the prices they receive for outputs. In many of the formerly socialist economies, there are monopolies or near monopolies in processing agricultural products and providing inputs. As a result, the farmer is caught in a classic squeeze between high input prices and low output prices, and his incentives are attenuated.

Farmers may need both an increase in competition and efficiency in the agribusiness sector. Neither will be easy. Government recognition of the importance of competition has led in some instances to creating several agribusiness firms. This has only shifted the problem to how to prevent tacit collusion. The problem is all the more difficult when the managers of the competing firms were, in their previous incarnations, cooperative managers of the same firm. The natural tendency of firms wishing to "stabilize" the market—sometimes a euphemism for charging monopoly prices—is enhanced by long-standing relationships.

The frequent linking of credit, supply of inputs, and marketing of output exacerbates these problems, because entering firms may be at an informational disadvantage in assessing the risks associated with lending to different farmers. Thus the natural limitations on competition in credit markets may escalate to limitations on competition in input and output markets.

Because of this, the linking of credit and other markets has been condemned. Some (see Bhaduri 1983) have argued that linking credit and other markets provides an additional way by which farmers (tenants) can be exploited. Yet in an environment in which incentives are important—in which there are risks of default—so that lenders worry about the level of effort of borrowers and in which landlords worry about the likelihood and consequence of default, linking credit and other markets can enhance economic efficiency. This is all the more the case if there are share tenancy contracts.

In a variety of contexts, these monopoly or monopsony powers have led farmers to form cooperatives for purposes of marketing and purchasing inputs. Cooperatives face at least two problems. The ultimate lack of competition may lie at the processing level. Also, perishable products in which transportation costs are high there may be a kind of local natural monopoly. The absence of competition may result in inefficiency within the cooperative.

There is thus no easy solution to the problem. Experience suggests that government marketing boards are *not* the solution. It may be helpful to supplement limited competition among domestic firms with foreign competition; or it may be worthwhile to facilitate (say through loan subsidies) the entry of new firms. Such subsidies can be justified on the grounds of external benefits created by the additional competition; farmers benefit from the higher producer prices and lower input prices offered by all producers.

Above all, it is important to have an effective antitrust policy. Such a policy must ensure both competitive structures (no firm dominates a market) and practice. Not only explicit collusion must be barred, but so too must tacit collusion. Criminal sanctions as well as treble damages may prove effective deterrents to anticompetitive behavior.

Recommendation 4. Countries should adopt strong antitrust laws, and encourage competition both domestically and internationally.

This suggests another dilemma. Many socialist and former socialist economies have taken the competitive paradigm too seriously: whenever they see profits, they see evidence of monopoly power. In some cases, monopoly witch hunting may be used by bureaucrats as an excuse to attack any organization that distinguishes itself economically. Two observations are in order: market economies are best described as being monopolistically competitive.¹⁸ Firms face downward sloping demand curves. They struggle to get short-run monopoly profits, by taking advantage of temporary cost advantages or product advantages.

Secondly, in the process of a transition to a market economy, there will be many opportunities for profits. The fact that firms earn profits is a sign that they have recognized profit opportunities and seized upon them. It should be interpreted positively, not negatively. What I have expressed concern about is outright collusive behavior, or predatory or other policies designed to prevent competition.

Dilemma 5. In the process of the transition to a market economy, firms may find themselves in temporary positions of limited monopoly power. Competition in market economies is never perfect. Excessive zeal in attacking "monopolies" may discourage entrepreneurship and lead to less effective competition. It is virtually impossible to devise policies or rules that discourage speculation and rent seeking without adversely affecting true entrepreneurs at the same time.

TRADITIONAL AGRICULTURAL PROGRAMS AND THE TRADITIONAL RATIONALE FOR INTERVENTION: MARKET FAILURE

Agricultural programs in developed market economies have been rationalized as interventions to correct market failures. The volatility of price and output within agriculture and the absence of insurance markets to cover these risks, it is argued, impose unacceptable risks upon farmers, necessitating price stabilization programs, and in some cases, crop insurance programs. The rapid changes in economic circumstances, including the decline in agricultural prices, leave many farm families unable to sustain an adequate standard of living.

Closer inspection of farm programs in the United States and elsewhere reveals that they are not really designed to meet either of the objectives of reducing risk or ensuring an adequate standard of living. Individuals are concerned with the variability of their income, not the variability of price or output alone. When price and quantity are negatively correlated (as supply and demand arguments lead us to believe they will be in a closed economy), then price stabilization programs may actually increase income variability. In an especially good year, where free markets would keep the price of output low, price stabilization programs increase the price farmers get and, hence, their income. In bad years, where the little output that is produced fetches a high price in free markets, farmers find their income lower than expected because the price is kept artificially low by the stabilization program. Even when price and yield are

¹⁸ This is a point that Schumpeter emphasized in his writing: with perfect competition, no firm would ever have any incentive to do research and innovate. Competition stimulates innovation, but at the same time innovation limits the extent of competition. See, for instance, Dasgupta and Stiglitz 1980a, and 1980b.

independent, price stabilization programs only eliminate one part of the source of income variability.

Price stabilization programs, of course, do more than reduce variability—they increase income. That is why they cost so much. And the full costs are far greater than the billions of dollars of direct expenditure by government; the full costs should include the increased prices that consumers must pay.

Price stabilization programs, moreover, do not increase income in a way that is directed at the second major objective of such agricultural policies, the alleviation of poverty. For these programs come in the form of price supports, and benefits are in proportion to marketed output.¹⁹ Not surprisingly, a disproportionate share of the gains go to well-off farmers.

The success of the farm interest groups in obtaining large transfers of income ranks among the most remarkable achievements of the agricultural sector in the more advanced countries, and provides a ready refutation of those political economy models based on the median voter. Yet rural poverty is real and markets do fail, as evidenced by the absence of adequate risk markets.

Recommendation 5. Design agricultural programs that directly address the market failures of inadequate risk markets, and the presence of rural poverty.

The logic underlying this recommendation is simple: the kinds of farm programs that have evolved in more advanced countries are expensive and give rise to massive economic inefficiencies. The more advanced countries may be able to afford the luxury of squandering these resources; the socialist economies in transition cannot afford this luxury. Yet the same political forces that have fostered these programs elsewhere are likely to arise in socialist economies. By designing programs that directly address the true economic problems, the pressure of these political forces and the resulting huge costs to the economy will be substantially reduced.

The trick in designing income stabilization programs (as in all risk reduction) is to reduce risk without attenuating incentives. Guaranteed incomes eliminate risk, but also eliminate incentives. In *The Theory of Commodity Price Stabilization*, Newbery and Stiglitz (1981) explore two different market-based ways of doing this. The first was the use of futures markets. Under fairly plausible conditions, efficient futures markets are better than price stabilization schemes. Heuristically, price stabilization schemes can be thought of as requiring individuals to sell forward their entire crop, while with futures markets, individuals can decide precisely how much of their crop to sell forward. They could sell forward their entire crop—and thus obtain the same outcome as with a price stabilization scheme—but in general, they will choose

¹⁹ The perhaps half-hearted attempts to limit the amount of subsidies received by any farmer have largely been circumvented, e.g., by dividing a farm into separate farms, each nominally owned by someone else. Given the potential role for complicated contractual arrangements, and the difficulties the government has in ascertaining the true incidence of any subsidy program, designing rules and regulations to eliminate this seems close to impossible.

not to do so. The fact that they choose not to do so means that they are better off with futures markets.²⁰

Yet even in the United States, the country with the most developed futures markets, farmers use them relatively little, even in those cases where the government has not fully stabilized the prices they receive. Though there are perhaps a variety of reasons for this (e.g. transactions costs), probably the most important is the presence of asymmetries of information. In the grain market in the United States, for instance, there are five dominant traders who have the resources and incentives to obtain good information about future prices of grain. Anyone trading with them is at a disadvantage. The standard Akerlof Lemons Model (Akerlof 1970) predicts that markets with this kind of information asymmetry will be thin.²¹ The popular characterization of the futures market (for which there is increasing evidence) is that the large firms and traders make their money at the expense of the "gamblers"—the dentists, doctors, and other uninformed traders—who believe that they can make a fast buck on the market.²² These are reasons why farmers may make limited use of a *private* futures market. But the government might provide a similar service could it provide a futures market that, while not exploiting the relatively uninformed consumers in the way that private futures markets may, also does not provide covert subsidies, as most price stabilization programs within developed countries do.

An alternative proposal described briefly by Newbery and Stiglitz (1981) would still have government, in effect, setting the price at levels that may be greater or less than market clearing. However, unlike the current programs where the government-set prices vary little with economic conditions, in the alternative program, prices move inversely with output of the crop in the country. Since no single farmer produces enough to affect the size of the country's output significantly, each individual farmer's incentives remain perfectly intact—the income of any farmer increases proportionately to his or her output. If the output of different farms is perfectly correlated, this proposal would provide perfect income stability while retaining individual incentives. At less than perfect correlation, incentives are maintained, and income is stabilized better than it is with a price stabilization program.²³

But this program—as with any price stabilization program—provides limited benefits to those farmers who have limited output. Is there any particular reason that there should be *special* programs for the rural poor? If a country is concerned about its poor, shouldn't it be

²⁰ This heuristic reasoning oversimplifies the differences between the two. With futures markets, the farmer sells forward a fixed amount. With price stabilization programs, the farmer in effect sells forward whatever his output is. If there were only price variability, and no output variability, the description given in the text would be accurate.

²¹ See Kyle 1986 for a formal model of futures markets with this kind of asymmetric information.

²² For a long while, the futures market provided an opportunity for tax arbitrage. The gains of the participants in the market were at the expense of the U.S. Treasury. The 1981 Tax Bill greatly reduced these tax arbitrage opportunities—reflected in greatly diminished transactions.

²³ There are important administrative problems with this scheme, relating to geographical and intertemporal arbitrage. The costs of such arbitrage may provide limits on the extent to which prices may vary (inversely) with output, and thus on the extent to which incomes can be stabilized.

equally concerned about poverty, wherever it occurs? If a country insists that the rural poor deserve special attention, then the appropriate policies should be income support programs; that is, welfare programs directed at the rural poor.²⁴ As always in the design of income support programs, there is a tradeoff between income security and incentives. Since in all programs benefits must eventually phase out as incomes rise, there is always an implicit tax, and such taxes attenuate incentives.

Dilemma 6. Programs that reduce risk often tend to attenuate incentives.

Dilemma 7. Programs that reduce poverty also attenuate incentives.

Recommendation 6. Redistributive policy should focus on the poor in general, not the rural poor in particular.

PROBLEMS OF RISK IN THE TRANSITION

So far, this discussion has focused on problems of risk that arise in agriculture in all countries—variability in prices and output. The socialist and formerly socialist economies face, in addition, three distinct sets of risks.

INADEQUATE INFRASTRUCTURE

In at least some of the countries there are major deficiencies in agricultural infrastructure. Goods that are produced have to be transported to markets before they rot. Farmers in these countries may face substantial additional risks if they cannot be assured that their goods will be transported to the market, or that seeds will arrive in time for planting, or that machinery will be available and working in time for harvest. A high proportion of produce in the USSR rots before reaching consumers, and this is not just due to conventional incentive problems. In many cases, vital roads become impassable with just a little rain. The absence of storage facilities makes farmers even more dependent on timely transportation.

It is paradoxical that the state's domination of agriculture in the socialist era left undone a main task of a state anywhere; i.e. provision and maintenance of public infrastructure for transportation and communication. The importance of the provision of agricultural infrastructure cannot be overstated. The return to private investments depends on the presence of public investments: to a large extent, they are complements.

COMMITMENTS

A second aspect of risk in the socialist and formerly socialist economies concerns the government's ability to make commitments. Individuals need to have assurances that they will be able to keep the fruits of their labor, that the reforms will be permanent, that those who engage in capitalist ventures will not, in some subsequent change in the political winds, be

²⁴ For instance, the government might make up some fraction of the difference between the farmer's income and a base support level.

ostracized or otherwise castigated. Some researchers have emphasized the importance of these political commitments, as well as the difficulties that the government has in making them credible.²⁵

OTHER TRANSITION RISKS

The third kind of risk is the transitory and unconventional risk of the transitional period. This risk derives from the necessarily uncoordinated changes in institutions, laws, and market structure, changes that may evolve over time in a way that cannot be totally predicted. Moreover, during the transition, many markets are not only imperfect in the economic theorist's use of the term; they are barely functional. To augment the risks of immature markets, the general economic stabilization programs create an environment in which real incomes are changing dramatically, relative prices gyrate, and the exchange rate can change by a factor of two or three overnight.

These risks may make privatization seem less attractive to farmers. Consider, for instance, the consequences if privatization were to mean the transfer of state and collective farms intact into private ownership. The new owners would be asked to accept not only the risks of normal agricultural activity, but an organizational form that has been shown to be economically dysfunctional, largely because of incentive problems.

The risks of the transition present a dilemma. If they are passed directly to agricultural producers, many will (if given the choice) choose to stay in collective production purely for protection against risk, and both they and society more generally will forego the improvement in productivity that alternative organization offers. If, on the other hand, government interventions absorb risks by, for example, guaranteeing domestic prices insulated from exchange rate fluctuations and changes in final demand, a dependence on the security of government guarantees may be fostered; the government's role is antithetical to its longer run objective.

Although these risks inhibit the emergence of the private sector, it is unclear what, if anything, the government can and should do about it. Common sense would seem to suggest two general lessons. First, the government should quickly resolve the uncertainties created by the transition process; that is, it should make clear its commitment to private property; it should specify how agriculture and the agribusiness sector will be reorganized; it should clearly delineate the rights of members of cooperatives with regard to cooperatively owned assets other than land; it should indicate the kinds and levels of taxes to be imposed; it should specify how existing debts and claims will be handled. Second, the government should retain much of the nonconventional risk through instruments that self destruct as the economic environment becomes more stable. The identification of these risks and design of appropriate instruments remains.

²⁵ Vickers and Yarrow (1988) argue that the particular way in which the Thatcher government privatized the national enterprises had the effect of a political commitment not to renationalize the enterprises. Share ownership was widespread, as the shares were obtained at discount prices. The owners of the share would have opposed any renationalization at less than market prices; while renationalization at market prices would be extremely costly.

Issues of government commitment appear in a number of different contexts; e.g. government commitments not to subsidize, either directly or through the financial system.

CONCLUSIONS

The failure of socialist economies is often attributed to a failure of incentives. This is broadly correct. But the transition to a market economy will not resolve all of the central problems facing agriculture within these economies; and it may not even resolve the central incentive issues.

There is pervasive government intervention in agriculture within market economies, and unless the former socialist economies recognize the political forces and economic problems that give rise to those interventions, they may be condemned to follow in the same pattern of economic inefficiency found in other market economies—inefficiencies which they are ill-prepared to absorb.

At the same time the success of the market economy depends on a much wider nexus of institutional arrangements than just "private property" and "free markets". Credit institutions, contract arrangements (including the legal institutions for enforcing contracts), bankruptcy law, and competition policy all affect both the incentives of those in agriculture and the likelihood that they will be able to obtain needed resources. Government action is required not only to provide the basic legal "infrastructure" but also to address the market failures, which if not motivating some of the large-scale government interventions in agriculture, at least provide them with an economic rationale.

Much recent discussion has emphasized the difficulties of the transition from a socialist to a market economy. These are indeed large. There are, however, opportunities. The institutional arrangements, legal structures, and government programs found in the United States and Western Europe have evolved over years. While they may be far better than those of the socialist economies, their deficiencies are evident, and there is a historical inertia that inhibits change. Moreover, developed market economies are saddled with inequalities of wealth, which could only be altered by a substantial attack on private property, with all of the adverse incentive effects to which such an attack would give rise. Beyond the broader social problems connected with inequalities in wealth are significant disincentives.

The formerly socialist countries have a rare opportunity to create an approximately egalitarian distribution of initial endowments in their future market economies. Egalitarianism is consistent with the more enduring remnants of otherwise discredited socialist ideology, and also speaks to some of the yearning for a "third way." An egalitarian approach to the distribution of initial endowments is consistent with and promotes economic efficiency. Egalitarianism as a dynamic policy, however, enforced through confiscatory taxes and redistribution of property would inhibit economic prosperity as effectively as central planning did. The time to be egalitarian is therefore now, at the outset of the transition, since redistribution in the future will be socially divisive and economically costly.

If countries entered the transition with a clean slate, i.e. with old institutions thoroughly erased and the board scrubbed clean, the design of new institutions would still be a challenging task, given new understanding of the limitations of the beleaguered invisible hand. The slate is not clean, however, and a complex political economy of the transition operates at every turn. The surprising decision throughout the region to restore land rights of owners prior to collectivization is evidence of political constraints on the economic management of the transition. Many of these constraints appear broadly consistent with an egalitarian distribution of initial

wealth, and that is a very optimistic sign. If the initial distribution is roughly equal, political pressures for taxes and other dynamic distortions that reduce incentives may be reduced. The progress of the transition so far thus provides a case for cautious optimism to counter our growing appreciation for the poverty of the socialist legacy and the difficulties of the current period.

REFERENCES

- Akerlof, George. 1970. "The Market for Lemons: Qualitative Uncertainty and the Market Mechanism." *Quarterly Journal of Economics* 84(3), pp. 488-500.
- Bhaduri, A. 1983. "Agricultural Backwardness Under Semi-Feudalism." *Economic Journal* 83(329), pp. 120-137.
- Brumbaugh, Daniel. 1988. *Thrifths under Siege*. Cambridge: Mass.: Ballinger Publishing.
- Cheung, Steven. 1969. "Transaction Costs, Risk Aversion, and the Choice of Contractual Arrangements," *Journal of Law and Economics*, 12, pp. 23-42.
- Dasgupta, Partha, and J. E. Stiglitz. 1980a. "Industrial Structure and the Nature of Innovative Activity." *Economic Journal* 90 (June), pp. 266-293.
- _____. 1980b. "Uncertainty, Market Structure and the Speed of R&D." *Bell Journal of Economics* 11(1), pp. 1-28.
- Eaton, Jonathan, and Mark Gersovitz. 1981. "Debt with Potential Repudiation: Theoretical and Empirical Analysis." *Review of Economic Studies* 48(153), pp. 289-309.
- Eaton, J., Mark Gersovitz, and J. E. Stiglitz. 1986. "The Pure Theory of Country Risk." *European Economic Review* 30 (June), pp. 481-513.
- Greenwald, Bruce, and J. E. Stiglitz. 1986. "Externalities in Economics with Imperfect Information and Incomplete Markets." *Quarterly Journal of Economics*, 101(2), pp. 229-264.
- _____. 1991. *Information, Finance and Markets: The Architecture of Allocative Mechanisms*. Working Paper Series No. 3652 (March). Cambridge, Mass.: National Bureau of Economic Research.
- Kane, E. J. 1989. "The High Cost of Incompletely Funding the FSLIC's Shortage of Explicit Capital." *Journal of Economic Perspectives* 3(4), pp. 31-47.
- Klein, B., and K. Leffler. 1981. "The Role of Market Forces in Assuring Contractual Performance." *Journal of Political Economy* 89(4).

- Kornai, János. 1990. *The Road to a Free Economy*. New York: W. W. Norton.
- Kyle, P. 1986. "Informed Speculation with Imperfect Competition." Princeton University Financial Center, memorandum no. 66 (January).
- McKinnon, R. Forthcoming. "Financial Control in the Transition to a Market Economy." In Christopher Clague and Gordon Rausser, eds., *The Emergence of Market Economies in Eastern Europe*. Cambridge: Basil Blackwell, Inc.
- Newbery, David, and J. E. Stiglitz. 1981. *The Theory of Commodity Price Stabilization*. Oxford: Clarendon Press.
- Sah, Raaj and Stiglitz, Joseph E. 1984. "The Economics of Price Scissors," American Economic Review, 74(1), March, pp. 125-138.
- _____. 1987. "Price Scissors and the Structure of the Economy," Quarterly Journal of Economics, CII, pp. 109-134.
- _____. 1992. *Peasants versus City Dwellers: Taxation and the Burden of Economic Development*. Oxford: Clarendon Press.
- Stiglitz, Joseph E. Forthcoming. "Remarks on the Design of Financial Systems for the Newly Emerging Democracies of Eastern Europe." In Christopher Clague and Gordon Rausser, eds., *The Emergence of Market Economies in Eastern Europe*. Cambridge: Basil Blackwell, Inc.
- _____. 1974. "Incentives and Risk Sharing in Sharecropping." *Review of Economic Studies* 41(126), pp. 219-255.
- Stiglitz, J. E., and Andrew Weiss. 1983. "Incentive Effects of Termination: Applications to the Credit and Labor Markets." *American Economic Review* 72 (December), pp. 912-927.
- Vickers, John, and George K. Yarrow. 1988. *Privatization: An Economic Analysis*. Cambridge, Mass.: MIT Press.

Part II **The International Environment**

THE ROLE OF GOVERNMENT IN AGRICULTURE IN DEVELOPED MARKET ECONOMIES

*G. Edward Schuh**

In reforming their policies and institutional arrangements, governments in Eastern Europe and the Soviet Union must take into account the pervasive role of government in the agriculture of developed countries, even though those countries are essentially market economies. Intervention by governments in the developed market economies determines in significant ways the market opportunities and constraints that producers face in the international economy. It also determines to a certain degree the efficiency prices that policymakers face in establishing price policies for their agriculture.

In a somewhat different context, the way that other governments have intervened in their agriculture provides some important experience on which governments in Central and Eastern Europe and the Soviet Union can draw in designing their own policies. In some cases, this experience provides important examples that could profitably be emulated. In other cases, it provides examples of policies to be avoided.

The first part of this paper provides some background for thinking about agricultural policy in any country; the second attempts to survey and characterize the policies used by the developing countries; and the final portion addresses some of the issues policymakers need to consider as they think about the future.

BACKGROUND

Three sets of issues form the background of this paper. The first is the pattern of government intervention in agriculture in the global agricultural scene. Although there are exceptions on both sides, agriculture in the developed market economies is highly protected, while agriculture in developing countries experiences serious discrimination at the hands of policymakers. In the first case, nominal market prices for the major commodities tend to be set significantly above international prices; in the second case, domestic prices tend to be significantly below international levels, although much of the discrimination is implicit in that it derives from overvalued currencies and structures designed to protect the manufacturing sector.

For obvious reasons, it is more difficult to generalize about the policies of Central and Eastern Europe and the Soviet Union. They can be classified as being closer to the policies of

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developing countries than to those of developed market economies, because Central and Eastern European countries and the Soviet Union tend to subsidize consumption by keeping food prices low, and to import supplies. The prevalence of queuing to obtain these low-priced products suggests that excess demand for most commodities was widespread. Whether these "waiting" costs offset the lower price of the goods is difficult to ascertain, so it is difficult to know whether consumption was in fact subsidized on balance.

A massive misuse of the world's agricultural resources characterizes the global agricultural sector. Far too much of the world's total food and agricultural output is produced in the high-cost developed countries; far too little is produced in the low-cost developing countries. The result is a loss in global efficiency and the sacrifice of a significant amount of food and agricultural output. As a corollary, there is also a significant loss in global income and welfare.

The second set of issues to consider by way of background is that the policies of the developed market economies were for the most part established at a time when the world was on a fixed exchange rate system, when international trade was fairly modest, and when international capital markets were even more modest. In effect, closed economies with fixed exchange rates characterized the world in which the policies were established.

Today's world is quite different, of course. With the exception of five years of serious economic recession, international trade has persistently grown at a faster pace than global GNP throughout the post-World War II period, thus creating more open national economies generally around the world. In addition, we have seen the emergence of a huge international capital market in which international financial flows far surpass international trade flows and dominate foreign exchange markets. This capital market links national economies in ways every bit as important as international trade.

Even though many developing countries still peg the value of their currencies to the values of one of the major reserve currencies, there is a great deal of implicit flexibility as the major currencies shift relative to each other. Consequently, for most practical purposes one can treat the global exchange rate system as if it were a flexible system. It can best be described as a bloc-flexible system.

Another feature of a world with a well-developed international capital market is that the national economic policies of individual countries are connected together in ways they have not been connected since the days of the gold standard. Still another feature is that when exchange rates are flexible and there is a well-developed international capital market, the burden of adjustment to changes in monetary and fiscal policies is borne by the tradeable sectors. The result is that macroeconomic policies now have to receive much more attention than they did in the past in the design of agricultural policies. This set of issues will be revisited in this paper.

Finally, when thinking about the design of agricultural policies, it is useful to take a developmental perspective. Among other things, such a perspective suggests consideration of how the food and agricultural sector can contribute most efficiently to the development of the larger economy. The classic perspective on this issue is that efficient agriculture contributes to the development of the general economy in five ways: (a) by increasing the supply of food available for domestic consumption; (b) by releasing labor for the expansion of the nonfarm sector of the economy; (c) by increasing the supply of domestic savings and providing capital for the expansion of the nonfarm sector; (d) by enlarging the size of the domestic market for

goods and services from the nonfarm sector; and (e) by increasing the supply of foreign exchange from exports to have the means of servicing international debt and to pay for the raw materials and other inputs needed for the expansion of the economy as a whole.

Two of these potential contributions deserve special comment. The first is the importance of increasing the supply of food available for domestic consumption. Increasing the supply of food available for domestic consumption is an important way of distributing the benefits of economic growth broadly in the economy. Moreover, it is a way of distributing those benefits in favor of the poor since low income consumers spend a larger share of their budget on food than do upper income groups. Thus the development of domestic agriculture, so long as it is done in efficient ways, can be a powerful source of economic growth. Everybody consumes food and thus everybody can benefit from lower food prices and more ample food supplies. The relative importance of agriculture has very little to do with the number or share of the labor force working in agriculture or with its contribution to GNP. It has almost everything to do with the fact that everybody consumes food.

The second contribution of agriculture deserving special attention is the release of labor for the expansion of the nonfarm sector. It is an important feature of economic development that a country starts the development process with the bulk of its labor force employed in agriculture, and with a need to transfer important parts of that labor to the nonfarm sector. This need for adjustment is inherent in the relative conditions of supply and demand for food and agricultural output. The implication is that an important component of food and agricultural policies should consist of policies that facilitate the adjustment of labor to the nonfarm sector. This need not mean that labor has to be concentrated in large urban centers. The issue is one of sectoral mobility, not geographic mobility. With proper policies this can be done in a decentralized way without a loss of resource efficiency (see Schuh 1982).

In chapter one of this volume D. Gale Johnson argues that employment in agriculture is probably higher in the countries of Central and Eastern Europe and the Soviet Union than in countries with comparable GNPs (although it is difficult to measure GNP in many of the socialist economies). Certainly agricultural wages have been highly subsidized in these countries. This suggests that there is a secular adjustment problem that will need to be addressed as the economies of these countries shift to depend more on market forces. Successful economic development policy will also require *continuing* attention to the labor adjustment problem because agriculture, as a tradeable sector, will continue to bear an important share of the adjustment to changes in monetary and fiscal policies, both domestically and on the international scene. Labor will need to adjust back and forth between the tradeable and nontradeable sectors as monetary conditions change. These tradeable and nontradeable sectors may be either agriculture or nonagriculture.

THE ROLE OF GOVERNMENTS IN DEVELOPED MARKET ECONOMIES

It has become commonplace to argue that markets can handle all the resource allocation questions an economy faces, and that the role of government in the economy should be minimal. This argument extends, in many cases, to allowing the market to determine the distribution of income, and to address the social problems of the disadvantaged.

This is too narrow a perspective. There are well-known reasons why governments need to intervene in the economy. The issue is not so much a question of whether or not to intervene, but rather how to intervene and under what conditions. (For a fuller discussion see Schuh 1983.) This perspective will influence the remainder of this paper.

Another important characteristic of what follows is a perspective that agricultural policies and institutions must be considered in the context of the larger economy, in contrast to focusing on sectoral policy alone. Given the structure of the international economy, such an approach is imperative in today's world. Moreover, policymakers might have avoided important errors in agricultural policy in the past if they had taken macroeconomic and other national policies into account.

In keeping with this perspective, the material that follows in this section is organized under five headings: (a) the macroeconomic environment; (b) investment policy; (c) commodity policy; (d) the social infrastructure and policy; and (e) tax policy.

THE MACROECONOMIC ENVIRONMENT

Three sets of policies determine the macroeconomic environment for agriculture: monetary policy, fiscal policy, and exchange rate policy. These policies are important because ultimately they influence both the nominal and real rates of interest for agriculture (and other sectors), the exchange rate at which prices from international markets are reflected into domestic markets, and the degree of stability or instability in commodity markets. (For a fuller discussion see Schuh 1976.) The configuration of monetary and fiscal policies, of course, has a great deal to do with real exchange rates, and in today's world may be as important or more important in determining those rates than domestic savings rates or the level of technology.

Making normative statements about what these policies have been in the developed market economies is not easy because they have varied a great deal among countries and over time. Moreover, although there has been a great deal of recent research to evaluate the effects of exchange rates on commodity markets in the United States, there has been very little research to evaluate the welfare effects of distortions in exchange rates, or to evaluate the welfare effects of distortions in monetary and fiscal policies. This constitutes a large gap in our knowledge. If one wants to make comparative statements about these policies, the issue becomes "compared to what?" and "in what time frame?"

Some useful generalizations can be made, however. First, concerning only overall monetary conditions, the decades of the 1970s and 1980s have been periods of significant monetary instability, largely influenced by the failure of U.S. monetary and fiscal policy; for all practical purposes the world is on a dollar standard and the United States essentially serves as the world's central banker. The distortions and instability in U.S. policy grew out of the failure of the Johnson Administration to raise taxes both to fight the Vietnam war and at the same time implement the programs of the Great Society. In addition, the quadrupling of petroleum prices by OPEC in 1973 led to a large monetary disturbance that created a great deal of instability in its own right, and which also contributed significantly to the international debt crises among the developing countries.

U.S. monetary policy tended to be "easy" and unstable during the 1970s. At the same time the government was running large budget deficits. One consequence of this configuration

of policies was a period of inflationary pressure in both the United States and in the international economy. Another consequence was a decline throughout the decade in the real value of the dollar in foreign exchange markets. In part because of this decline, U.S. agriculture became highly competitive in international commodity markets (see Schuh 1974).

At the end of 1979, however, the United States imposed a dramatic change in its monetary policy. Because the U.S. dollar was essentially in a free-fall at that time (driven in part by another large OPEC-engineered increase in petroleum prices), the Federal Reserve decided that it would no longer inject money into the system to finance the large deficit in the Federal budget. Thus began the largest monetary disturbance of the post-World War II period. Real interest rates rose rapidly to unprecedentedly high levels, and the value of the dollar also rose by an unprecedented amount. In fact, the rise in the real value of the dollar in the ensuing almost six-year period was the second largest rise in history for the currency of a developed country, surpassed only by the large rise in the British pound when the Thatcher government launched its initial efforts to bring the economy of that country under control.

The consequence of this monetary squeeze was the largest economic recession since the Great Depression of the 1930s. The recession, although unusually sharp and widespread, was also somewhat short-lived. Inflation was squeezed out of the system in a fairly short period of time, and relatively stable monetary conditions have prevailed ever since. That is not to say that the developed countries have been pursuing neutral monetary and fiscal policies in the ensuing period. (A neutral monetary policy is one which attains a stable price level. A neutral fiscal policy is one which attains a balanced federal budget on a sustained basis.) On the contrary, the United States has continued to run large budget deficits and to pursue tight monetary policies to offset them. This has led to real interest rates that are high in historical terms, and a value of the dollar that is higher than it would otherwise be. This has taken the competitive edge off of U.S. export sectors, including agriculture, and also increased the U.S. demand for imports. Were it not for protection of its agricultural sector, the United States would have been a much more attractive market for imports.

The strength of the U.S. dollar during the 1980s has not been a consequence only of the perversity of U.S. monetary and fiscal policies, however. During this period the countries of Western Europe and Japan have pursued a configuration of monetary and fiscal policies that have been just the opposite of those pursued by the United States—conservative fiscal policies and fairly easy monetary policies. This widened the interest rate differential between the United States and those countries and induced a large capital flow into the United States.

The real value of the U.S. dollar rose almost constantly from the end of 1979 through May of 1985. By the end of that period, U.S. farmers, who at the end of the 1970s thought they could compete with almost anybody in the world, had concluded they could compete with nobody. The clamor for protection and income support by agricultural interests became loud and forceful. However, the value of the dollar began another sustained decline, which ended only in late 1988 as the Federal Reserve began to pursue tighter monetary policies to contain inflationary pressures. This decline in the value of the dollar helped ease the pressure for more protectionism in the United States.

The world may be in for another large monetary disturbance in the near future. Because of failure to balance its budget, the United States has accumulated a large foreign debt. U.S. borrowing from the capital market has driven up domestic interest rates and induced an inflow

of capital. Experts on these issues project the accumulation of debt, now at a level of approximately \$600 billion,¹ will not level off until it has reached a level of \$1 trillion, which would require a trade surplus of \$50 billion a year just to service. Another significant fall in the real value of the dollar is likely in the future. Just when this will occur depends on the response of U.S. monetary authorities and what the Congress does about fiscal policy.

An important feature of the 1970s and the 1980s is the long and large swings in the relative values of national currencies. These extended swings in the real value of national currencies pose a greater challenge to national policymakers than the short-term instability that receives so much attention in popular criticism of the flexible exchange rate system. The latter can be dealt with in most cases by hedging in foreign exchange futures markets.

Two other features of the exchange rate policy during the past two decades are worth noting. The first was the tendency of Japan to undervalue the yen during an important part of the 1980s. This distortion in the value of its currency amounted to an implicit export subsidy and an implicit tariff. More generally, the high savings rate in Japan and the protection of its domestic industry tend to give its currency a lower real value than it would otherwise have.

The second important feature of the international exchange rate system is the "semi-fixed" exchange rate system used by the European Community (exclusive of Great Britain). This system includes countries as disparate as West Germany, with its conservative fiscal and monetary policies, and Italy, with its easy monetary and fiscal policies. The resulting exchange rate configuration constitutes an important degree of "fixity" on the international scene, as well as significant distortions, since overall the value of the deutsche mark is probably undervalued in this system and the value of the lira is probably overvalued.

The configuration of monetary, fiscal, and exchange rate policies among the developed market economies is an important part of the economic environment that the countries of Central and Eastern Europe and the Soviet Union need to take into account in reforming their institutional arrangements and in establishing their future economic policies. In fact, these policies are far more important in shaping the environment for institutional reform than the conventional agricultural policies of other countries. Also, the size and welfare consequences of distortions in the real value of currencies, and of non-neutral monetary and fiscal policies, are almost totally neglected in the current fad for measuring the distortions in commodity markets. This constitutes a serious omission.

INVESTMENT POLICY

Governments in developed market economies have traditionally played an important role in four aspects of investment policy relative to their agricultural sector. These include public investments in agricultural research, in the education of the rural population, in the physical infrastructure for the rural sector, and in the provision of subsidized credit for the agricultural sector. As D. Gale Johnson has noted, governments traditionally underinvest in the first three of these. Whether they do the same in providing subsidized credit is less clear.

The creation and diffusion of new production technology for agriculture is a powerful source of economic growth for the economy as a whole, for reasons noted above (also see T.

¹ A billion is 1,000 million. All dollar amounts are current U.S. dollars unless otherwise stated.

W. Schultz 1964). An important part of the research capacity to create this new production technology has to be in the public sector, especially for biological and basic research, since the private sector will not be able to capture the benefits of its investments in producing this technology (see Hayami and Ruttan 1985; and Ruttan 1982). The social rates of return from investing in agricultural research are demonstrably high, ranging from rates of 25 to 35 percent to over 100 percent (see Hayami and Ruttan 1985 for a collation of empirical results). These are higher than the rate of return on conventional investments, and probably higher than the rates of return on other investments in the public sector serving agriculture. Unfortunately, we do not have estimates on the rates of return to investments in the education of rural people and rural infrastructure similar to what we have for investments in agricultural research.

There is a tendency in some parts to view this public investment in agriculture as a subsidy for the agricultural sector. That argument fails to recognize the significant externalities involved in certain kinds of agricultural research that justify government intervention. These public investments thus do not constitute distortions in the conventional sense. In fact, the high measured rates of return to these investments suggest that governments are *underinvesting* in these activities, even in the developed countries.

Investing in the education of its citizenry is another activity in which it is widely believed there are significant externalities, and in which there is an important role for government. Studies that compare the social rate of return from educating the rural population compared to educating the urban population are fairly limited. What we do know is that there is usually a significant disparity in the quality and amount of schooling between rural and urban sectors, with the rural sectors having much the worst of it. This is a serious issue, especially in light of the need to transfer labor from agriculture to the nonfarm sector until fairly late in the development process. Education and training are important means of facilitating this adjustment process, and thus of helping to reduce and eliminate the traditional disparity between the incomes of people employed in agriculture and the rural sector and those of the urban population.

Investment in the physical infrastructure serving agriculture and rural areas is another important role for governments in the developed market economies. Agriculture is traditionally a widely dispersed economic activity, undertaken in almost all parts of a country. Thus, a physical infrastructure is needed to channel the output to the consumers, who in developed countries tend to be highly concentrated and to take the modern inputs essential to a modern agriculture from their sources in urban centers out to the individual farmers. This physical infrastructure tends to be taken for granted in the developed countries, in part because governments have invested well in them in the past. As rural populations decline, however, the rural infrastructure tends to receive less attention. Moreover, in general, it is not clear that governments have invested in the rural infrastructure at the levels they should have, or at the same level they have invested to accommodate urban populations.

Finally, there is the issue of subsidized credit for agriculture. Most governments provide it in one form or another, in part motivated by the argument that unstable commodity prices lead to both internal and external credit rationing. The logic is that subsidized credit is needed if investment in agriculture is to be carried out to socially optimal levels. Government programs in the developed economies have tended to stabilize prices for the major commodities by isolating domestic agriculture from the vagaries of the international market. However, the subsidized credit continues.

A few general examples will give some dimension to these subsidies. In the United States, much of the subsidized credit comes through the commodity programs, in which the producer receives a loan when he or she signs up to participate in the program. If the market price at the time the producer sells the crop is below the loan level, the government takes possession of the crop and the loan is forgiven. This amounts to a substantial infusion of credit to the sector. In addition, the government also has disaster programs when crops fail because of bad weather or some other natural disaster. These programs also have become important sources of subsidized credit. There are counties in the wheat belt, for example, that have been declared disaster areas for ten to twelve years in a row. In addition, over the years, there have been subsidized credit programs for rural development schemes, addressed either to poor farmers or to rural communities to finance their local development efforts.

I am less familiar with government credit programs in Western Europe or in Japan. However, the so-called structural adjustment programs of the European Community involve strong elements of subsidized credit. Unfortunately, these programs are pointed mostly in the wrong direction. They facilitate the modernization of the production process and thus lead to increases in production under conditions in which supply is already larger than markets can accommodate at prevailing prices. Subsidized credit to facilitate the outmigration of labor from agriculture would be much more in order. The same applies to the United States.

To conclude, governments in the developed market economies play important roles on the investment side of agriculture. In three of these roles the evidence is that the government plays an insufficient role; public investments should be larger. In the fourth role, the provision of subsidized credit, there is substantial controversy over whether markets alone would supply socially optimal amounts of credit. Moreover, there are important issues regarding the composition of the credit. It would appear that subsidized credit to facilitate the outmigration of labor from the sector would have a high social payoff. Whether public credit is needed to finance the production of crops and livestock in these countries is less clear.

COMMODITY PROGRAMS

Commodity programs in the developed market economies vary greatly from one country to another, and also a great deal from one commodity to another within a given country. Rather than providing any kind of detail on these programs, this paper emphasizes a few salient issues.

As noted earlier, in general the developed market economies tend to set the prices of important commodities above international border price equivalents and to protect these sectors with trade barriers of one kind or another. Moreover, these interventions in commodity markets tend to be the most important source of income transfers to producers in the agricultural sector.

The manner in which the respective governments attain these objectives varies a great deal, however. The extent to which producer prices exceed border price equivalents also varies. The European Community probably has gone the furthest in isolating its agriculture from international markets. Its main policy instrument is a variable levy, a nontariff barrier which in an important sense provides absolute protection from changes in international markets. This policy also passes a large share of the costs of the protection provided to the sector to the consumer. However, when international prices rose above the agreed levels of protection in the early and mid-1970s, the Community implemented a variable export tax to continue to isolate

its agriculture from international markets. In that case, domestic consumers were afforded some degree of protection from high external prices and foreign exchange was sacrificed.

Commodity programs in the United States take a variety of forms. More than most countries, the United States uses producer payment schemes. For important commodities such as wheat and corn, a price band is set by a combination of loan levels and target prices. For participating producers, the target price determines the payment the producer will receive from the government in the form of a check. The amount of the check is determined by the difference between the target price and market prices at a legislatively determined period of the year, and the producer's output covered by the program.

The target price is determined by the political process, and is usually above what would otherwise be market clearing levels. The loan level is set at levels expected to be below market clearing levels. In effect, it sets the floor for the market since the government takes control of stocks when prices fall below this level. (The government takes control either by direct acquisition or by providing incentives for farmers to place their stocks in a farmer-owned grain reserve.) If stocks are in hand, the target price puts a ceiling on the market since stocks subject to government control are to be released when prices reach that level.

There are still other forms of government intervention in commodity markets in the United States. The dairy sector still has the traditional price support program, with the government taking control of stocks to sustain market prices. In recent years there has been a government herd buyout program to reduce herd numbers so as to reduce the accumulation of stocks. Peanuts have a peculiar multiple price scheme whereby prices for domestic consumption are set at one level and those for export receive a different price. Rice also has had a unique program, and the domestic sugar sector is, for the most part, protected by a system of fees, tariffs, and import quotas. More generally, large components of the U.S. agricultural sector receive little or no protection, nor involve direct government intervention in the sector. The livestock sector is an important example of the lack of direct government programs, although the policies for the grains sectors obviously have an important impact on this sector.

It is important to note that a producer payment scheme has the potential to be an implicit export subsidy. If target prices are set above what otherwise would be market clearing levels, and production control schemes are inadequate, market prices could fall below what would otherwise be their market clearing levels. In the case of wheat, the commodity program has probably involved an important export subsidy. The program for corn has provided less of an export subsidy, since the target price has been closer to market clearing levels.

Australia and Canada operate with marketing boards for important sectors of their agriculture. The intent is to stabilize income streams for the producer, and to obtain the highest price possible for them. Whether the boards actually attain this objective, of course, is another question. Canada intervenes strongly in other parts of its agricultural sector as well, especially in the dairy, poultry, and fruit and vegetable sectors. These sectors tend to be heavily protected by tariffs and other trade barriers. Australia, on the other hand, tends to have the most market-oriented policy among the developed market economies.

Japan receives a lot of criticism for the protection it provides to its agricultural sector. This criticism tends to focus on the rice, beef, and citrus sectors. Rice is a politically important commodity. The domestic price ranges from six to eight times international levels, and is protected by barriers to trade. The beef and citrus sectors are similarly protected by barriers

to trade. On Japan's behalf, however, it should be noted that it imports more than half of its total caloric intake. Few countries other than Norway import as large a share of their domestic food consumption.

Storage policy can also be mentioned under the heading of commodity policy; however, the accumulation of stocks is largely a byproduct of government intervention in commodity markets that has other objectives. The explicit accumulation of stocks to stabilize domestic markets is rare.

The complex instruments that governments of developed market economies use to intervene in agricultural markets generate substantial welfare effects. Evaluation of these welfare effects is a complex issue in its own right (see Just, Hueth, and Schmitz 1982).

The period leading up to and including the current Uruguay Round of multilateral trade negotiations has witnessed a great deal of empirical research to evaluate the consequences of eliminating protectionist trade barriers and moving to freer trade. Gardner (1989) provides a synthesis of much of this work. Parikh and others (1988) report the results of a large global modeling effort, perhaps the most ambitious available, to evaluate the consequences of moving to freer trade.

An important effect of commodity policies as they have been practiced in most of the developed market economies is that they elicit a greater supply than consumers are willing to take at prevailing prices, unless (as in the U.S.) producer payment schemes allow market prices to reach an equilibrium. This results in resource waste, since resources are used to produce more than consumers would demand at market clearing levels. Even when producer payment schemes are used, excess resources are induced into the sector, with consequent efficiency losses, although the losses are smaller given that consumers are able to benefit from the larger output (and lower prices). Tyers and Anderson (1988) provide estimates of the effects on trade and welfare from liberalizing OECD agricultural policies.

An important consequence of policies that set prices above border price equivalents is that they lead to the dumping of accumulated stocks into international markets. In the case of producer payment schemes, as used by the United States, for example, the policy amounts to an implicit export subsidy. Tyers (1985) reports the results of research that evaluates the international impacts of protection and market insulation for European Community agricultural policies. Anderson and Tyers (1986) assess the effects of agricultural policies generally in the industrial countries on traditional food exporters. Other pertinent work by this team includes Anderson and Tyers (1990). The latter reports estimates of the welfare gains to developing countries from possible food trade liberalization following the Uruguay round.

It is currently popular to develop estimates of producer and consumer subsidy equivalents as a means of measuring the degree of intervention in agricultural markets. Though these attempts at quantification are to be lauded, most of the efforts ignore the effects of distortions in foreign exchange markets, as well as the problems of fiscal drag from the taxes required to support producer payments and other government programs. Measures of effective protection are probably more suitable measures, but the data demands for such measures are quite great. Another difficulty in evaluating these policies is that most measures fail to take account of the substantial externalities of the respective programs. Policies such as the variable levy, by isolating domestic markets, add to the instability in international markets, for example. This should be taken into account in any complete assessment of the policies.

Agricultural policies practiced by industrial countries have led to large treasury costs, significant deadweight welfare losses, and in the case of the European Community, Japan, and in some cases the United States, high food prices for consumers. Unfortunately, these programs do little to alleviate the serious problems of poverty in these countries. Given that the income transfers are based on the level of output, the bulk of the income transfers go to the medium and large farmers.

This raises the question of why these programs persist. In the case of the United States, the electoral system gives a disproportionate weight to the farm and rural population. In the case of the European Community and Japan, the hunger experienced during World War II provides a political rationale for supporting agriculture to assure adequate food supplies. In the case of Japan, the problem is complicated by the post-World War II land reform, which kept producers tied to the land and supportive of the party in power.

The pressures for reform generated by the Uruguay Round of multilateral trade negotiations have led to a number of proposals for changing the nature of the policies. One of these is to shift to a reliance on tariffs alone (and away from nontariff barriers), described as tariffication, with the idea that the tariffs could then be lowered gradually and uniformly in a way that could be more objectively monitored. Another important proposal is that income payments to producers be completely delinked from market prices and output. Producers would receive direct income transfers based on their level of income, and not on their level of output or "market" prices. This would be an important step in the right direction.

SOCIAL INFRASTRUCTURE AND SOCIAL POLICY

The social infrastructure of agriculture is as important as the physical infrastructure. However, given that such infrastructures tend to be well-developed and work reasonably well in the developed market economies, they tend to be taken for granted and neglected as essential features of a market economy. Some elements of the social infrastructure may be the least developed in the countries of Eastern Europe and the Soviet Union, and at the same time the most seriously needed in the transition to more market-oriented economies.

Some of the institutions that constitute the social infrastructure have been discussed above. These include agricultural research systems, educational and training systems, credit institutions, the arrangements for implementing effective monetary and fiscal policies, those for implementing exchange rate policies, and commodity policies. However, governments in the developed market economies have also established other kinds of social institutions. An important one for a decentralized market economy is market information systems that provide both consumers and producers with current information on markets and on the future outlook for these markets. Associated with such systems are economic research services that analyze the data and provide analyses and interpretations. These same economic research services also provide information and analyses to policymakers so they can design effective policies and evaluate the performance of policies and other institutions.

In addition, a range of market institutions as such is made available, including primary and secondary credit markets; commodity and product markets of various kinds; foreign exchange markets; input markets; and futures markets for commodities, financial transactions, and foreign exchange. The social infrastructure to make markets work efficiently absorbs resources; it is not a free good to society. It also requires careful design.

Still another important part of the social infrastructure is capital market instruments needed to allow the financial system to perform its function as intermediary. Other instruments such as warrants are needed to enable different individuals in markets to take control of and transfer commodities, and to hold them in storage. In addition, there are all the regulations needed to preserve competition in markets, to avoid graft and corruption, and to provide to the extent possible standardized goods and services. Grades and standards are important examples of the latter.

Turning to social policy and social welfare programs, all developing market economies have a variety of institutions of this kind. These include social security or provision for retirement in old age, unemployment insurance, and welfare programs, which provide income support for those unable to earn an adequate income from the market place. In the case of the United States, food stamp programs are an important means of providing income support to poor consumers.

Social programs, which provide a safety net for those not able to earn acceptable levels of income from the market place, or for those who suffer significant income losses in times of economic distress, are essential institutions as an economy shifts from one of central control to a stronger market orientation. They need to be high on the institutional development agenda if the citizenry is to develop confidence in market arrangements as the means for resource allocation.

TAX POLICY

As the above discussion illustrates, the public sector is important even in economies that depend chiefly on markets to allocate resources. This requires that resources be captured from the private sector on a regular basis to support these institutions. In the developed market economies these resources are captured by a wide array of excise and income taxes and fees and tariffs. The revenue from these taxes is used for investment programs, especially in human capital of various forms, and for income transfer programs. At least in the case of the United States, there currently is a tendency to make greater use of user fees to provide the resources for public services and institutions.

ISSUES FOR THE FUTURE

Some of the implications for policy and institutional arrangements needed for the future are discussed below.

MONETARY, FISCAL, AND EXCHANGE RATE POLICY

As the countries of Eastern Europe and the Soviet Union become more fully integrated into the international economy, both through the markets for goods and services and through the international capital market, they will be increasingly exposed to shocks from the international economy. It will thus be important that their own monetary and fiscal policies not impose large shocks on their agricultural sectors, and that the shocks that come from abroad be spread widely and quickly through the economy. Pursuing neutral monetary and fiscal policies and flexible

exchange rate policies are important means by which this goal can be achieved. As noted above, neutral monetary policies will seek to stabilize the price level without serious economic recessions, and neutral fiscal policy will seek to attain a balanced budget over a period of, say, three years. Pursuit of such policies will avoid distortions in exchange rates if the latter are free, and also avoid induced fluctuations in real exchange rates that contribute to unstable commodity markets.

The advantage of flexible exchange rates is that they transmit shocks from the external economy immediately to the domestic economy and help to spread the adjustment to those shocks widely among sectors. Fixed exchange rates tend over time to get further and further out of equilibrium, and then when realignments become necessary, the shocks are large. Moreover, there is a tendency for those who have a vested interest in the distortion to lobby for delays in the realignment.

THE BIFURCATION OF ECONOMIC POLICY

As national economies become more open, they grow beyond the reach of national economic policies. Consequently, government interventions such as national commodity programs become increasingly less effective. Under these circumstances, policy tends to become bifurcated. Some part of it shifts to the international level and becomes imbedded in the codes, rules, and disciplines of international institutional arrangements such as the GATT. Another important part shifts down to the state and local level. In the process of shifting downward, policy changes from being focused primarily on commodity markets to focusing on factor markets and on incomes policy.

This bifurcation is proceeding rapidly in many countries of the world. The various examples of economic integration such as the Canada–United States Free Trade Agreement and EC-92 are shifts of policy making and implementation up to the international level. The rapid and significant shift of policy making and implementation down to the state and local level in the United States illustrate the shift downward. Countries engaged in the design of new institutional arrangements should take heed of this important implication of increasingly open economies.

ADJUSTMENT POLICIES

Two kinds of labor adjustment policies are needed in most countries. The first includes policies to deal with the secular problem of adjusting labor out of agriculture as the modernization and development of the sector proceeds. Strengthening the education and training systems for the rural population should be high on the policy agenda. Providing a labor market information system, which indicates where jobs are available, is another. Providing direct subsidies to sustain families during periods of employment change is still another.

The problem of dealing with the adjustments arising from the long swings in real exchange rates is more complex. Keeping the economy as decentralized as possible is one way of addressing this problem, since it will facilitate the adjustment of labor from one sector to another. Developing a diversified agriculture by means of the introduction of new technology is still another. Care should be taken in either case to avoid the sacrifice of a great deal of efficiency in the name of decentralization and diversification.

ENVIRONMENTAL ISSUES

The developed market economies have had periodic surges of interest in environmental problems. Traditionally, this interest has focused on issues of conservation, with the emphasis on soil erosion. Such periods of interest have usually coincided with periods of rising food prices or other problems that suggest that the natural resource base of agriculture is declining. In the United States in particular, these concerns have led to subsidies for the construction of terraces and contours to slow and eliminate water runoff, and for the use of certain cropping practices that reduce water runoff and hold the soil in place.

The agenda of the environmentalists and the nature of the problem has changed over time, however. Those concerned with sustainable development, the current euphemism for conservation, are still (properly) concerned about preserving the underlying resource base. However, the agenda has broadened significantly to include issues of pollution, which can take a wide variety of forms. These new issues include the pollution of both surface and underground water supplies from the excessive use of fertilizers and pesticides; the silting up of lakes, streams, and rivers from soil erosion; food safety concerns; the problem of acid rain caused by air from industrial activities; the destruction of the ozone layer from the use of chlorofluorocarbons; and the potential for global warming due to the release of greenhouse gases into the atmosphere.

Traditional commodity programs as practiced by the developed market economies carry an important share of the responsibility for many of these problems. By providing a significant degree of price and income stability they have led to a high degree of specialization in production. This has reduced the use of rotations, which tend to include soil-holding crops. It has also led to continuous tillage of the same commercial crop, which ultimately has important effects on the tilth and structure of the soil. Increased soil erosion is an important consequence.

By setting prices higher than what would otherwise be market clearing levels, these programs have also led to excess use of fertilizers and pesticides that pollute water supplies. Pesticides in particular become an issue of food safety, and have led to increased regulation of the food sector.

The mechanization of agriculture and the widespread use of automobiles by rural people has led to increased release of carbon dioxide, which potentially may lead to global warming. Price supports for the dairy sector, which lead to larger dairy herds than would otherwise be the case, also contribute to global warming through the release of methane into the atmosphere.

A rationalization of agricultural policies in the developed market economies would do much to reduce these various forms of pollution. A changed agenda for agricultural researchers, to give more attention to making more efficient use of fertilizers and pesticides, can potentially reduce the amount of those inputs needed and thus reduce pollution. Increased regulation is also needed, especially to avoid pollution of food as it goes to the consumer.

Environmental concerns have led to pleas for a wide range of government interventions to reduce the significance of these environmental effects. Interventions of certain kinds can be justified since many of the effects come under the rubric of externalities. The danger, however, is that legitimate environmental concerns can be captured by political interests and used to obtain income transfers.

The fact that some countries give more attention to environmental issues than others has created a concern about the effect of environmental regulations on international trade. Concerns about food safety, for example, can lead to regulations that are in effect nontariff barriers to trade. Research on these issues is only now beginning.

CONCLUSION

The role of governments in the developed market economies is pervasive, even though those countries are essentially market economies. Some of the intervention is counter-productive; some is essential for markets to perform efficiently. The challenge is to define the proper role and institutional arrangements that constitute efficient and equitable intervention.

REFERENCES

- Anderson, K., and R. Tyers 1986. "Agricultural Policies of Industrial Countries and Their Effects on Traditional Food Exporters." *Economic Record* 62(179), pp. 385–99.
- _____. 1990. "Welfare Gains to Developing Countries from Food Trade Liberalization Following the Uruguay Round." Mimeo. University of Adelaide, Adelaide Australia.
- Gardner, Bruce. 1983. "Efficient Redistribution Through Commodity Markets." *American Journal of Agricultural Economics* 65(2), pp. 225–234.
- _____. 1989. "Recent Studies of Agricultural Trade Liberalization." In A. Maunder and A. Valdes, eds., *Agriculture and Governments in an Interdependent World*. London: Dartmouth.
- Hayami, Yujiro, and Vernon W. Ruttan. 1985. *Agricultural Development: An International Perspective*. Baltimore: The Johns Hopkins University Press.
- Johnson, D. Gale. 1990. *World Agriculture in Disarray*. London: Fontanna Press.
- Josling, Timothy. 1969. "A Formal Approach to Agricultural Policy." *Journal of Agricultural Economics* 20, pp. 175–91.
- _____. 1974. "Agricultural Policies in Developed Countries: A Review." *Journal of Agricultural Economics* 25(3), pp. 220–64.
- Just, R. E., D. L. Hueth, and A. Schmitz. 1982. *Applied Welfare Economics and Public Policy*. Englewood Cliffs, N.J.: Prentice Hall.
- Nerlove, Marc. 1958. *The Dynamics of Supply*. Baltimore: The Johns Hopkins University Press.

- Parikh, K. S., G. Fischer, K. Frohberg, and O. Gulbrandsen. 1988. *Towards Free Trade in Agriculture*. Dordrecht, The Netherlands: M. Nijhoff.
- Ruttan, Vernon W. 1982. *Agricultural Research Policy*. Minneapolis: University of Minnesota Press.
- Schuh, G. Edward. 1974. "The Exchange Rate and U.S. Agriculture." *American Journal of Agricultural Economics* 56, pp. 1-13.
- _____. 1976. "The New Macroeconomics of Agriculture." *American Journal of Agricultural Economics* 58, pp. 802-11.
- _____. 1982. "Out-Migration, Rural Productivity, and the Distribution of Income." In Richard H. Sabot, ed., *Migration and the Labor Market in Developing Countries*. Boulder, Colo.: Westview Press.
- _____. 1983. "The Role of Markets and Governments in the World Food Economy." In D. Gale Johnson and G. Edward Schuh, eds., *The Role of Markets in the World Food Economy*. Boulder, Colo.: Westview Press.
- Schultz, T. W. 1964. *Transforming Traditional Agriculture*. New Haven: Yale University Press.
- Tyers, R. 1985. "International Impacts of Protection and Market Insulation: Model Structure and Results for EC Agricultural Policy." *Journal of Policy Modelling* 7(2), pp. 219-251.
- Tyers, R., and K. Anderson. 1988. "Liberalizing OECD Agricultural Policies in the Uruguay Round: Effects on Trade and Welfare." *Journal of Agricultural Economics* 39 (May), pp. 192-216.

TRENDS AND DEVELOPMENTS IN AGRICULTURAL COMMODITY MARKETS

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Reforms in agricultural policy in the developed and developing nations (including Eastern Europe and the Soviet Union), a faltering world economy, and various trade policies and restructuring will all contribute to uncertainty in world agricultural commodity markets in the 1990s. This uncertainty will be compounded by lower stocks and a lower capacity for increased production worldwide compared with the 1980s. The 1980s were dominated by the developed nations and their domestic agricultural and export subsidies. Sources of change in the 1990s will be more varied.

Domestic agricultural and trade policies tend to react to macroeconomic conditions. With lower stocks and higher idle producing areas in the 1990s (due in part to environmental interventions), swings in macroeconomic conditions will be a more significant source of price volatility in world agricultural commodity markets than the recent past. Policy instruments employed to support agriculture in developed nations are more directed to the control of factors affecting domestic agriculture and food supplies than to the management of surges and reductions in global supply and demand. During most of the 1980s, world economic growth was relatively stable, reenforcing the domestic orientation of agricultural and trade policy for major exporters.

Markets already affected by lean stocks and idle productive areas may absorb impacts of far-reaching policy and institutional reforms in the 1990s. The GATT negotiations may result in significant albeit phased or staged changes in domestic agricultural policies of developed nations. The success of debt management and restructuring will affect production levels and growth in demand for agricultural commodities in the developing nations that were major sources of export market expansion in the 1980s. The ongoing economic and political reforms in Eastern Europe, the Soviet Union, and China have the potential to alter fundamental patterns of world agricultural commodity trade that have evolved over the past two decades.

Several economic models attempt to anticipate the effects of policy and institutional change in world agricultural commodity markets. These models vary widely; most are in developmental stages. This assessment uses a multimarket commodity model similar to those widely used for policy analysis and forecasting in the late 1970s. In the next section, this modeling approach is compared to others now in use. Following that, the paper summarizes an early 1990 "baseline" or projection developed with the multimarket commodity modeling system. This baseline will serve as a reference for assessing possible effects of policy and institutional

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changes on agriculture and the macroeconomy. The penultimate section reviews and assesses results of experiments with the modeling system. Finally, the paper offers suggestions and observations emphasizing the policy reforms in Eastern Europe and the Soviet Union.

ANALYTICAL SYSTEMS

Systems for analyzing the impacts of institutional, policy, technology, and other changes on world agricultural commodity markets developed significantly during the 1980s. In part, this was a result of an increased appreciation of the importance of international markets for the performance of domestic agriculture in developed nations. Miscalculations of impacts of domestic support schemes and export subsidies have been very costly (D. G. Johnson 1978). A number of additional concerns have stimulated quantitative modeling of agricultural markets.

The three modeling approaches used for evaluating medium- to long-term trends and developments in world agricultural markets are: elasticity models, multimarket commodity models, and general equilibrium models. All of these are now in common use (Taylor and others 1990). A review of one model from each of the three types will lend perspective to the empirical projections presented later in this paper. The systems reviewed are the Food and Agriculture Policy Research Institute (FAPRI) multimarket commodity modeling system used for the projections in this paper (FAPRI 1990a and 1990b) the Multilateral Trade Model (MTM) of OECD (OECD 1989), and the Basic Link System (BLS), an estimated dynamic general equilibrium model developed at the International Institute of Applied Systems Analysis (IIASA) (Fischer and Frohberg 1982).

Table 4-1 summarizes the countries and commodities covered by these three illustrative systems, and table 4-2 lists structural features. The BLS and other general equilibrium systems tend to be the more highly aggregated. Specifications for trade and domestic agricultural policies in the BLS are highly stylized. The BLS is designed for longer term projections, utilizes more primitive policy and other conditioning assumptions, represents equilibrium in input and output markets, and incorporates the nonagriculture sector. A characteristic of the BLS and other general equilibrium models is their emphasis on the real sector of the economy. Attempts to incorporate financial sectors into international and national computable general equilibrium systems have been relatively unsuccessful to date (S. R. Johnson 1986).

The MTM and related elasticity models can be specified with high commodity and country detail. These models require restrictive assumptions on functional form and are "eclectic" in empirical content. Detailed specifications of domestic agricultural and trade policy can be incorporated. These models have a limited ability to incorporate linkage between agriculture and developments outside the sector, and they rarely include the dynamics of adjustment. Successful applications of these models have involved calibration to specific years and then experiments to determine impacts of selected policy changes. Much of the analytical work for the current GATT round has been supported by modeling systems of this type.

Multimarket commodity models are used for shorter term intertemporal analyses of policy and other shocks to agricultural commodity markets (Braverman, Hammer, and Gron 1987; Hildreth and Jarrett 1955). Linkages between the commodity markets are generally limited to cross-price effects in demand and acreage restrictions and consistency conditions for supply and

Table 4-1. Countries and Commodities Covered in the MTM, BLS, and FAPRI Models

Coverage	MTM	BLS	FAPRI ^{a,b}
Country	Canada, Australia, EC, U.S., Austria, New Zealand, Japan, Nordic Group, CPE, Mediterranean Group, and Rest of the World (total of 11 models)	Argentina, Australia, U.S., Austria, Brazil, Canada, China, CPE, Egypt, India, Indonesia, Japan, Kenya, Mexico, Nigeria, New Zealand, Pakistan, Thailand, Turkey, EC, and 14 group models (total of 14 models)	U.S., EC-12, Australia, Canada, South Africa, Thailand, Argentina, China, Japan, USSR, East Europe, Brazil, India, Egypt, Nigeria, South Korea, Taiwan, Tunisia, Algeria, and Rest of the World
Commodity	Wheat, coarse grains, sugar, forage, rice, soybeans, rapeseed, dairy, pork, poultry, beef and veal, and mutton and lamb	Wheat, rice, coarse grains, protein feeds, bovine and ovine meat, dairy, other animal products, other food, nonfood agriculture, nonagriculture, (more detailed in some countries; also being updated to 18 commodities	Wheat, sorghum, soybeans, and feed grains (corn, barley, oats)

a. Country coverage changes with commodity.

b. No trade in livestock products. Only the U.S. model has a livestock sector.

Source: Author.

use. These models can incorporate specific domestic agricultural and trade policy parameters, evaluate macroeconomic shocks, and reflect the dynamics of multimarket adjustment. Their high empirical content, and the fact that all are conditioned by forecasts for the macroeconomy and other economic sectors limits these models. The models do not close for the input markets, and feedbacks to the aggregate economy from agriculture are generally absent, even for nations in which agriculture is an important part of the economy.

Unfortunately, the Eastern European and the Soviet components of all three types of agricultural sector or commodity models are largely descriptive. Thus, it is difficult to use these modeling systems to assess the domestic impacts of policy and institutional changes, and to trace them to world commodity markets. Historical information on agriculture and food consumption in Eastern Europe and the USSR is limited. Moreover, projection of historical trends does not properly characterize the processes currently underway in the region. During and after the transition, producers, processors, distributors, and consumers will have different incentives than in the past. Under these circumstances one can assume effects for Eastern Europe and the USSR and evaluate the effects on world commodity markets.

Table 4-2. *Major Structural Features of the MTM, BLS, and FAPRI Models*

<i>Structural Feature</i>	<i>MTM</i>	<i>BLS</i>	<i>FAPRI</i>
Parameter Estimation:			
Calibration	X		
Estimation		X	X
Time Dimension:			
Dynamic		X	X
Static	X		
Annual	X	X	X
Quarterly			X ^a
General Equilibrium		X	
Partial Equilibrium	X		X
Sample period	1979–81	1960–76 ^b	1965–89
Government Policy:			
Specific	X		X
General		X	
Production/Supply:			
Acreage and Yield		X	X
Output Only	X		

a. The crop sector is annual and the U.S. livestock sector is quarterly.

b. The BLS is partially updated to 1986.

Source: Author.

BASELINE PROJECTIONS

The "baseline" or set of projections for world agricultural commodity markets prepared annually by the Food and Agricultural Policy Research Institute (FAPRI 1990a and 1990b) relies on assumptions about macroeconomic conditions, trade, and agricultural policy parameters, and weather, technology, and population. Average weather conditions are used, reflected in yields during the last ten or fifteen years for most countries. The supply structure for the multimarket commodity models uses acreage and yield equations, with nearly all of the policy and economic content in the acreage specifications. In some cases, relative input and output prices are included in the yield specifications. For the countries or regions in which acreage and yield information are not available or are of questionable quality, reduced form specifications for estimating production and supply response are applied. Rates of technical change implied by the yield trends used for the baseline are 1–2 percent for most of the widely traded commodities. Population figures are from the United Nations medium projections (WEFA 1989).

The domestic agricultural policy parameters are detailed for the developed nations (e.g. the EC, Japan, the U.S., Canada, Australia), and for developing countries that are important

suppliers to world markets, (e.g. Brazil and Argentina). The policy assumptions used for the baseline are basically a continuation of current regulatory approaches. For example, changes in domestic agricultural and trade policies which may occur because of changes in the GATT, and possible effects of the U.S. federal budget and adjustments in agricultural policy that may occur in the EC after 1992 are not reflected in the baseline. The assumption of continuation of current policy in the baseline is intentional, providing an opportunity for evaluations of policy changes as differences from the baseline. Policy parameters that are indicative of these assumptions for the U.S., the EC, and Japan are shown in tables 4-3 and 4-4.

The 1990 FAPRI baseline was developed early in the calendar year and utilizes macroeconomic forecasts from two sources, Wharton Econometrics Forecasting Associates (WEFA 1989) and Project LINK (LINK 1989). Three sets of conditioning variables from the macroeconomic scenario for the FAPRI baseline are summarized in tables 4-5, 4-6, and 4-7: GDP, the GDP deflator, and an exchange rate. These macroeconomic projections show slowing economic growth in Eastern Europe and the USSR in the short term, economic growth in the U.S. lower than in the EC countries, a continued high rate of economic growth for the Asian countries, and a significant rebound in economic growth in Latin America and Africa. The global rate of economic growth is between 2.5 and 3.0 percent. The dollar relative to major currencies for developed nations continues to fall, albeit at a slower rate than in the recent past. Inflation is 4-5 percent for most developed nations. In short, with the exception of Eastern Europe, the Soviet Union, Latin America, and Africa, the baseline assumes macroeconomic conditions similar to the immediate past. That is, the baseline incorporates modest economic growth, a continuing alignment of exchange rates, energy prices moving up more or less with inflation, and agricultural policies that continue to protect domestic producers in Japan, the U.S., and the EC.

Historical and projected FAPRI 1990 baseline results for coarse grains, wheat, and soybeans (soybean products) are summarized in the figures to support the general observations about trends and conditions implied by a continuation of current policies and macroeconomic conditions. These three commodities are directly or indirectly the focus of most domestic agricultural and trade policy, and as well indicative of conditions in international commodity markets. Only selected results are presented. The results summarized are for world nominal and real prices; utilization and stocks; trade; and Soviet and East European use, production, and imports.

PRICES

Figure 4-1 shows nominal and real historical U.S. Gulf Port prices for wheat, corn, and soybeans by U.S. crop year for the period 1971/72 through 1988/89, FAPRI annual baseline projections for 1989/90 through 1993/94 and then the simple average of the annual projections for the four years 1994/95 through 1997/98. Two trends are evident from figure 4-1; the

Table 4-3. FAPRI Baseline Model Selected Policy Assumptions for the EC, Japan, and the U.S., and Comparisons with World Market Prices, Wheat, Barley, and Rice

<i>Variable/Year</i>	<i>1986/87</i>	<i>1987/88</i>	<i>1988/89</i>	<i>1989/90</i>	<i>1990/91</i>	<i>1991/92</i>	<i>1992/93</i>	<i>1993/94</i>	<i>1994-98 Avg.</i>
<i>EC-12</i>									
<i>Intervention (ECU per metric ton)</i>									
Wheat	179	179	179	179	179	179	179	179	179
Barley	179	170	170	170	170	170	170	170	170
Rapeseed	422	408	408	408	408	408	408	408	408
<i>Japan</i>									
<i>Government Purchase (yen per metric ton)</i>									
Rice	311,133	292,617	292,617	292,617	292,617	292,617	292,617	292,617	179
Wheat	182,717	180,417	180,417	180,417	180,417	180,417	180,417	180,417	170
Barley	164,580	162,500	162,500	162,500	162,500	162,500	162,500	162,500	408
<i>United States</i>									
<i>Target Price (dollars per metric ton)</i>									
Wheat	161	161	155	151	147	147	147	147	147
Corn	119	119	115	112	108	108	108	105	108
<i>Acreage Reduction (percent)</i>									
Wheat	22.5	27.5	27.5	10.0	5.0	5.0	5.0	5.0	5.0
Corn	17.5	20.0	20.0	10.0	10.0	10.0	10.0	10.0	10.0
<i>Conservation Reserve (millions of hectares)</i>									
	0.8	6.4	9.9	11.9	14.2	16.2	16.2	16.2	14.5
<i>Export Enhancement Expenditures (millions of dollars)</i>									
	643	1,277	391	566	566	566	566	566	566

Source: FAPRI 1990a and 1990b.

Table 4-4. FAPRI Baseline Model Selected Policy Assumptions on Government Support and World Prices for the EC, Japan, and the U.S.
(dollars per metric ton)

<i>Variable/Year</i>	<i>1986/86</i>	<i>1987/88</i>	<i>1988/89</i>	<i>1989/90</i>	<i>1990/91</i>	<i>1991/92</i>	<i>1992/93</i>	<i>1993/94</i>	<i>1994-98 Avg.</i>
<i>Wheat</i>									
EC-12 Intervention	191	210	202	193	199	209	214	219	234
Japan purchase	1,179	1,326	1,350	1,297	1,364	1,467	1,535	1,611	1,860
U.S. target	161	161	155	151	147	147	147	147	147
U.S. N. Pacific ^b	109	124	167	170	145	143	140	147	161
<i>Barley</i>									
EC-12 Intervention	191	199	192	183	189	198	203	208	233
Japan purchase	1,362	1,194	1,216	1,168	1,228	1,321	1,383	1,451	1,675
U.S. target	119	119	115	112	108	108	108	108	108
U.S. N. Pacific ^b	91	101	151	133	110	113	113	112	116
<i>Rice</i>									
Japan purchase	2,007	2,150	2,190	2,104	2,212	2,379	2,490	2,613	3,017
U.S. target ^a	375	367	351	340	337	337	337	337	337
FOB Bangkok ^b	221	294	317	308	322	286	286	291	318

a Milled rice equivalent assuming a milling rate of 0.7.

b World price at indicated port or location.

Source: FAPRI 1990a and 1990b.

Table 4-5. Real GDP Projections Used for the 1990 FAPRI/World Agricultural Commodity Markets Baseline Model (percentage change)

<i>Country</i>	<i>1986 (1980 Bil.\$)</i>	<i>1987</i>	<i>1988</i>	<i>1989</i>	<i>1990</i>	<i>1991</i>	<i>1992</i>	<i>1993</i>	<i>1994</i>	<i>1995-99 Avg.</i>
<i>Developed</i>	<i>9,084.1</i>	<i>3.4</i>	<i>4.2</i>	<i>3.4</i>	<i>2.6</i>	<i>3.0</i>	<i>3.2</i>	<i>2.9</i>	<i>2.9</i>	<i>3.0</i>
Australia	176.3	4.6	3.9	3.0	1.5	4.4	4.1	4.4	3.8	4.1
Canada	314.6	4.5	5.0	2.8	1.5	3.8	3.3	3.2	3.1	3.2
EC-12	3,451.2	2.7	3.6	3.4	3.0	3.0	3.0	2.9	2.9	2.9
Japan	1,319.2	4.2	5.9	4.7	3.9	4.4	4.3	3.7	4.0	4.0
South Africa	86.5	2.1	3.2	2.2	0.8	3.0	2.7	2.3	2.2	2.4
United States	3,163.7	3.8	4.4	3.0	2.0	2.4	2.9	2.5	2.5	2.6
<i>CPE</i>	<i>2,010.1</i>	<i>1.5</i>	<i>1.8</i>	<i>1.2</i>	<i>2.2</i>	<i>1.4</i>	<i>1.8</i>	<i>2.3</i>	<i>1.8</i>	<i>2.0</i>
East Europe	541.9	1.1	1.9	0.1	1.3	1.9	2.4	2.5	2.5	2.5
USSR	1,277.1	1.5	1.5	0.8	2.0	0.9	1.3	2.1	1.7	1.7
<i>Developing</i>										
Asia	974.2	9.0	8.2	6.9	6.1	6.3	6.2	6.2	6.3	6.2
Latin America	1,005.2	2.9	0.3	0.2	3.5	4.9	4.4	5.0	4.7	4.7
Africa	421.0	0.6	2.3	2.5	2.1	2.6	3.5	3.9	3.6	3.7
World	13,761.6	3.4	4.2	3.5	3.2	3.4	3.6	3.5	3.6	3.6

Source: For the USSR: LINK 1989 for projections through 1993. The source for all other projections through 1994 is WEFA 1989. Foreign projections for 1995-99 assume a continuation of conditions prevailing during the 1992-94 period (FAPRI 1990a and 1990b).

Table 4-6. GDP Deflator Projections Used for the 1990 FAPRI/World Agricultural Commodity Markets Baseline Model (percentage change)

<i>Country</i>	<i>1986 (1980 Bil.\$)</i>	<i>1987</i>	<i>1988</i>	<i>1989</i>	<i>1990</i>	<i>1991</i>	<i>1992</i>	<i>1993</i>	<i>1994</i>	<i>1995-99 Avg.</i>
<i>Developed</i>										
Australia	1.59	7.7	9.0	8.3	5.9	4.6	5.1	5.2	5.2	5.2
Canada	1.38	3.8	4.1	5.2	4.6	4.2	4.4	3.8	3.7	4.0
EC-12	1.43	2.5	4.2	5.0	4.4	3.9	3.7	3.7	3.4	3.6
Japan	1.11	-0.2	0.3	3.0	2.1	1.9	2.5	2.5	2.5	2.3
South Africa	2.13	15.3	14.4	13.9	13.9	12.6	12.7	12.7	12.0	12.6
United States	1.33	3.3	3.1	4.7	4.7	4.5	4.3	4.3	4.6	4.5
<i>Developing</i>										
<i>Asia</i>										
India	1.59	8.7	8.8	9.8	8.5	8.8	8.9	8.8	9.0	8.9
Indonesia	1.64	14.0	12.2	11.1	12.5	13.6	13.8	14.4	14.8	14.3
Pakistan	1.56	5.6	7.1	6.8	8.5	8.0	7.0	6.7	8.3	7.3
South Korea	1.38	3.5	4.2	4.0	4.5	4.7	3.9	3.8	1.0	3.9
Taiwan	1.24	0.5	0.8	3.5	2.2	2.7	4.3	4.2	3.1	3.9
Thailand	1.21	4.0	7.0	5.1	5.8	5.2	5.1	5.0	4.9	5.0
<i>Latin America</i>										
Argentina	2,774.08	128.8	378.3	3,386.5	33.2	115.0	163.7	223.9	183.9	190.5
Brazil	263.00	209.2	684.6	1,160.1	1,189.7	113.9	154.7	144.4	313.6	204.2
Mexico	16.80	139.3	103.7	14.5	16.0	20.3	17.1	19.4	23.0	19.9
<i>Africa</i>										
Algeria	1.45	4.8	6.5	6.6	5.7	5.7	5.8	6.0	5.9	5.9
Egypt	1.77	13.0	13.8	14.0	13.2	13.0	13.7	13.9	13.9	13.8
Morocco	1.59	2.8	3.4	4.7	5.5	4.7	5.1	5.4	5.1	5.1
Nigeria	2.38	28.3	25.1	12.1	15.1	23.2	17.7	11.1	10.1	13.0
Saudi Arabia	1.08	-12.0	10.6	-8.2	2.2	0.9	3.0	3.4	4.6	3.7
Tunisia	1.64	7.9	14.3	7.0	16.5	11.5	11.1	8.3	10.3	10.3

Source: For Algeria, Morocco, and Tunisia: LINK 1989 for projections through 1993. The source for all other projections through 1994 is WEFA 1989. Foreign projections for 1995-99 assume a continuation of conditions prevailing during the 1992-94 period (FAPRI 1990a and 1990b).

Table 4-7. Exchange Rate Projections Used for the 1990 FAPRI/World Agricultural Commodity Markets Baseline Model (percentage change)

Country	1986 (1980 Bil.\$)	1987	1988	1989	1990	1991	1992	1993	1994	1995-99 Avg.
<i>Developed</i>										
Australia	1.49	-4.2	-10.7	0.8	5.0	6.0	5.0	2.0	1.6	2.0
Canada	1.39	-4.5	-7.2	-3.5	0.3	0.9	0.2	-0.2	-0.2	-1.0
EC-12	1.08	-14.9	-2.5	9.8	0.5	-6.8	-2.4	-2.4	-2.1	-2.3
Japan	167.48	-13.9	-11.2	8.7	-0.2	-9.5	-4.6	-4.6	-4.8	-4.5
South Africa	2.13	-4.4	11.1	18.1	11.0	3.6	9.2	9.2	9.5	9.4
United States	1.22	-11.7	-5.8	5.9	0.6	-5.2	-2.2	-2.2	-2.0	-2.0
<i>Developing</i>										
<i>Asia</i>										
India	12.79	1.4	11.6	12.9	5.1	3.9	3.7	4.1	3.6	3.8
Indonesia	1,282.60	28.2	2.5	6.7	6.7	8.3	9.3	8.5	9.0	8.9
Pakistan	16.65	4.5	3.6	14.9	6.3	7.0	6.0	6.0	6.3	6.1
South Korea	881.50	-6.7	-11.1	-8.4	-0.2	-2.5	-1.9	-1.5	-1.9	-1.8
Taiwan	37.84	-15.9	-10.2	-7.8	-5.8	-5.9	-3.9	-3.1	-2.5	-3.2
Thailand	26.30	-2.2	-1.7	1.6	-1.1	-2.2	-2.9	-3.9	-3.8	-3.5
<i>Latin America</i>										
Argentina	1.0	100.0	350.0	4,600.0	59.6	100.7	143.0	192.4	160.6	165.3
Brazil	0.01	300.0	550.0	957.7	1,407.3	132.7	156.8	140.5	305.6	201.0
Mexico	611.30	123.6	64.7	8.4	15.0	13.9	11.1	14.4	18.1	14.5
<i>Africa</i>										
Algeria	4.70	3.2	22.0	27.5	15.0	12.0	8.0	8.0	8.0	8.0
Egypt	1.40	7.1	46.7	18.2	15.4	13.3	11.8	7.9	9.8	10.1
Morocco	9.10	-7.7	-2.3	5.0	4.1	4.0	4.0	3.7	3.9	3.9
Nigeria	1.30	208.2	11.9	76.2	21.5	20.8	30.0	25.2	16.4	24.0
Saudi Arabia	3.70	1.1	0.0	0.0	2.9	2.6	0.0	0.0	0.0	0.0
Tunisia	0.80	3.7	3.6	11.6	9.4	7.6	6.2	7.5	7.0	7.2

Source: For Algeria, Morocco, and Tunisia: LINK 1989 for projections through 1993. The source for all other projections through 1994 is WEFA 1989. Foreign projections for 1995-99 assume a continuation of conditions prevailing during the 1992-94 period (FAPRI 1990a and 1990b).

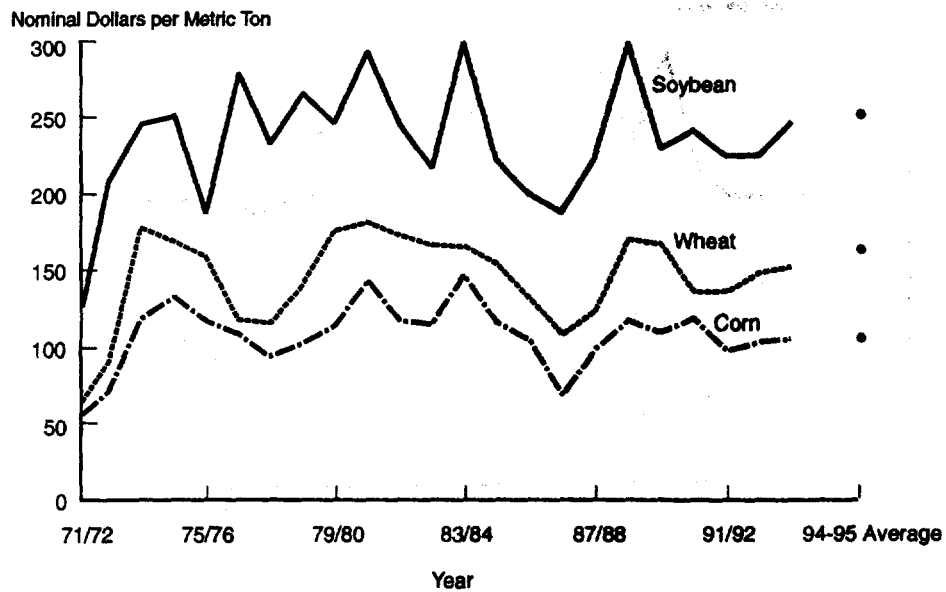
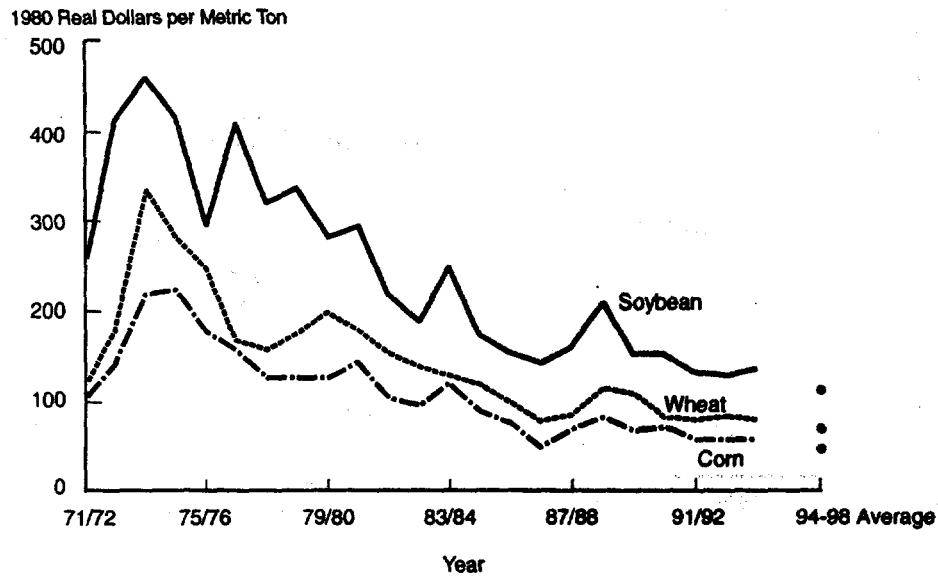
constant nominal and slightly declining real prices for the baseline and the lack of variability in the projection prices compared with the historical prices. For the latter, it is important to recall that yield variability due to weather is not included, and that the rate of technological change, the agricultural policies, and the macroeconomic scenario are constant. With the initial conditions and constant conditioning assumptions, the dynamics of the modeling system quickly work themselves out, giving results for the late years of the baseline that depend primarily on a balance struck by agricultural policy, technological change, and the macroeconomic scenario. The declining real agricultural prices in the baseline continue a long-term historical trend. Real prices for basic agricultural commodities have fallen secularly during the past thirty to forty years with only temporary run-ups in the early parts of the 1950s and 1970s. In the baseline, the technology and policy assumptions imply agricultural production levels that slightly outstrip the growth in demand at constant real prices. However, the declines in real prices projected in the baseline are less rapid than observed since the most recent peak in the early 1970s, reflecting decreased subsidization of agriculture in the developed nations, lower rates of technical change, and macroeconomic growth uninterrupted by recession.

STOCKS AND USE

The historical and projected world price variations are mirrored in the summary of coarse grains and wheat utilization and stocks shown in figure 4-2. Annual utilization increases at a rate of approximately one percent for both coarse grains and wheat. Ending stocks for coarse grains and wheat have, however, fluctuated significantly in the recent past. The lower panel of figure 4.2 shows that the stocks to use ratio for wheat and coarse grains increased significantly in the early to mid-1980s. These high stock levels were largely a result of the high floor price (loan rate) in the U.S. and target prices prior to 1985. Entering the 1990s, the projected stocks to use ratios are at levels more similar to those in the early 1970s. That is, for the baseline, projected stocks levels grow at about the same rate as use, implying that continuing the current agricultural and macroeconomic policies will not generate the worldwide surpluses of the 1980s.

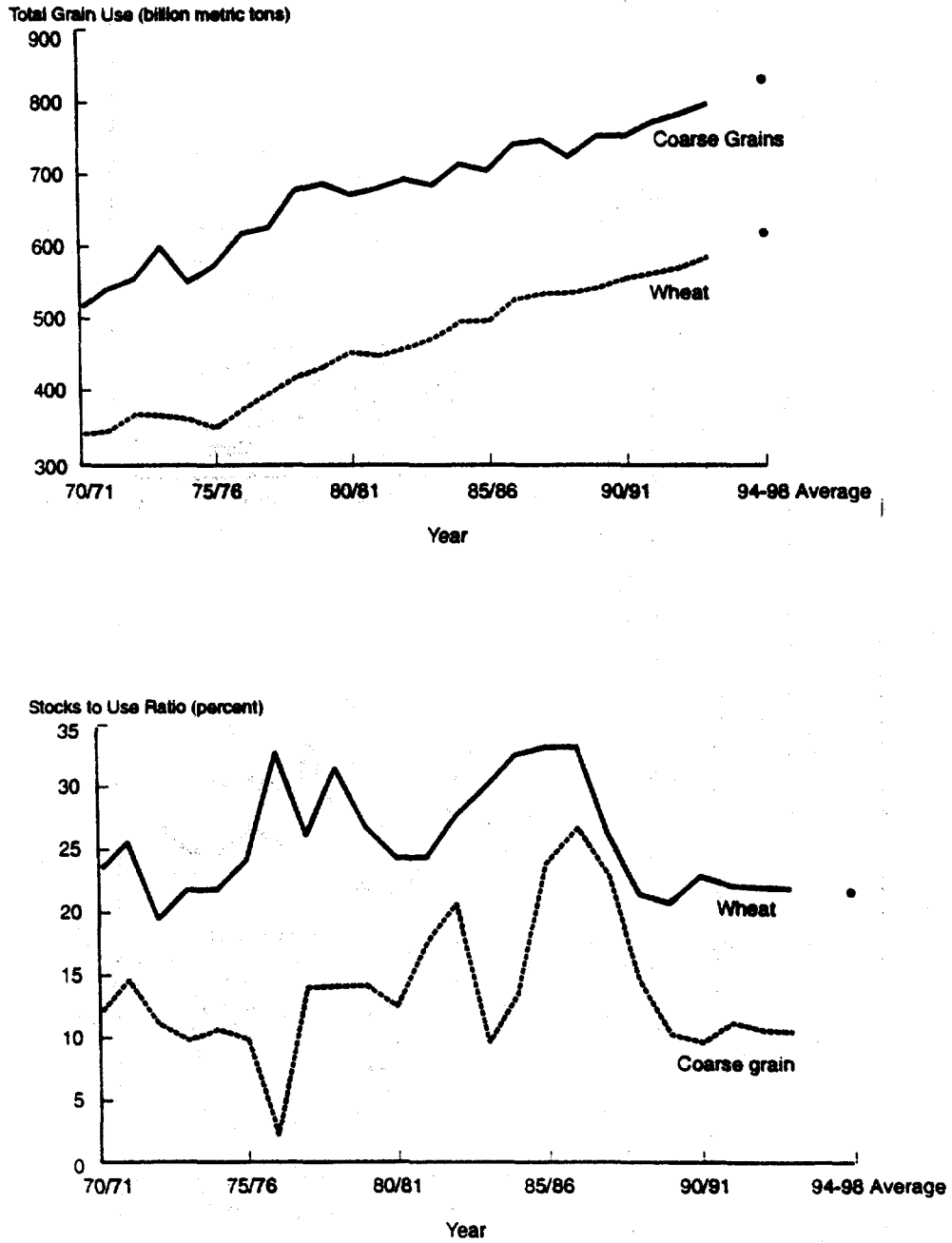
Figure 4-2 also suggests potential price uncertainty in the international commodity markets for coarse grains and wheat. With stock to use ratios at current and projected levels, relatively small declines in production or surges in demand can generate significant increases in world prices. These surges could be, for example, due to weather conditions or departures from the macroeconomic scenario. An added factor contributing to the potential for price volatility is a change in U.S. agricultural policy that began in 1985. Government programs designed to create idle acreage in the U.S. have shifted from annual to longer term multi-year contracts. Thus, in periods of low agricultural yield, for example drought, the U.S. will not be able to respond as in the past by expanding planted acreage without a major change in agricultural policy. In the baseline projections, two-thirds of acreage made idle by government programs in the U.S. is under a ten year conservation reserve contract and one-third is under an annual contract.

Figure 4-1. Real (1980 dollars) and Nominal USA Gulf Port Prices for Corn, Wheat and Soybeans, Historical and Projected by U.S. Crop Year



Source: FAPRI Baseline July 1990.

Figure 4-2. Historical and Projected Grain Utilization and Stocks to Use Ratios for Coarse Grains and Wheat



Source: FAPRI Baseline July 1990.

TRADE

Recent growth in imports of both coarse grains and wheat has been largely in the developing economies. According to the FAPRI model, this projected growth in grain imports will continue to be primarily in the developing world (see figure 4-3). Imports for Eastern Europe and the Soviet Union in the FAPRI model have been determined according to historic behavior, and depend primarily on weather shocks and availability of hard currency. Imports in the developed economies have been flat. Domestic farm and consumer prices for the EC and Japan are largely insulated from world market prices. The growth in the imports of developing countries has occurred mainly in Asia (China is included in the developing countries). The continuing growth in developing country imports projected in the baseline is a result of the real world price decline, exchange rate depreciation, and strong economic growth among the Asian importing nations. Imports of the coarse grain and wheat deficit nations of Latin America and Africa are projected to grow more slowly.

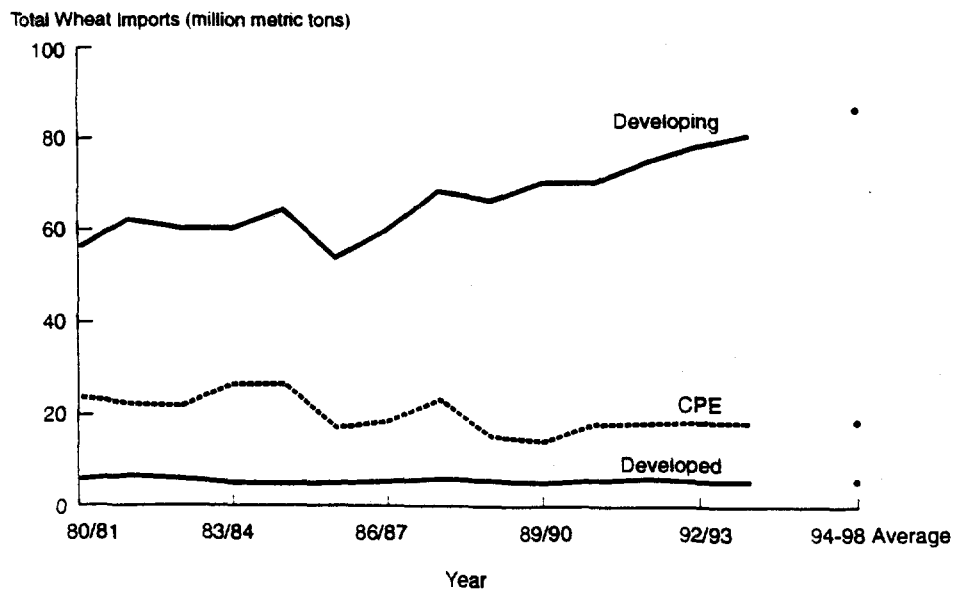
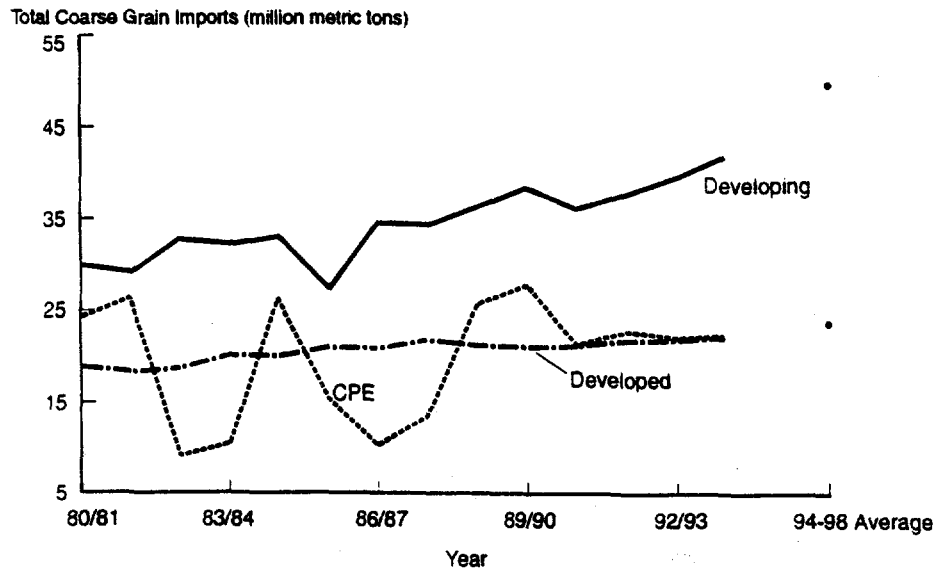
The projections for total import growth and the source of this growth raise a number of policy issues. What are the levels of use in the African and Latin American nations that have high rates of population growth but slowing imports? Is there a deterioration in the food supplies of these nations? Will the growth of imports in Asia increase as in the past when economic progress becomes more evenly spread among the nations in the region? How will trade and domestic policy reform in the developed nations affect the import pattern that emerges in the projection period? Some of these issues are taken up in the next section. But the thinness of the stocks compared with production and use and the potential for policy change will almost certainly result in more price volatility than in the 1980s.

The Eastern European and Soviet use and trade in wheat and coarse grains are shown in figures 4-4 through 4-7. Again, the history and the FAPRI projections are included. Imports for these nations are estimated as differences between production and use. Little information on domestic stocks is available, and they are presumed to be consistent (and low) across years. The impact of weather on trade and international prices can be easily noted, especially for the Soviet Union in figures 4-4 and 4-5. For example, the range of coarse grain imports for the Soviet Union, 10–20 million metric tons translates into 1.4–2.7 million hectares or 10–20 percent of the land idled under programs in the United States. Soviet wheat imports are projected to be about 15 million metric tons (figure 4-5). In Eastern Europe, imports of coarse grain and wheat are important to the domestic economies but represent a small share of world grain trade. These simple comparisons illustrate the importance of developments in Eastern Europe and the Soviet Union for grain prices during the 1990s, and the potential impacts of international markets and market prices on these nations.

DEVELOPMENTS IN THE 1990s

Anticipating developments and trends in world agricultural commodity markets is hazardous at best. Qualifications aside, however, significant developments in international agricultural markets should come primarily from policy and institutional change. Others would perhaps argue for the importance of biotechnology, pressures from environmental regulation or

Figure 4-3. Total Coarse Grain and Wheat Imports for Developed Countries, Developing Countries, and CPEs, Historical and Projected



Source: FAPRI Baseline July 1990.

population change. These are all critical to the future but are more likely to have major effects in the next century. Four key institutional or policy changes are briefly discussed relative to the baseline: macroeconomic policy and income growth, growth and stability in the developing world, trade reform, and the continuing restructuring in Eastern Europe and the Soviet Union. The objective is to indicate the consequences of departure from a future based on continuation of current policies and macroeconomic conditions.

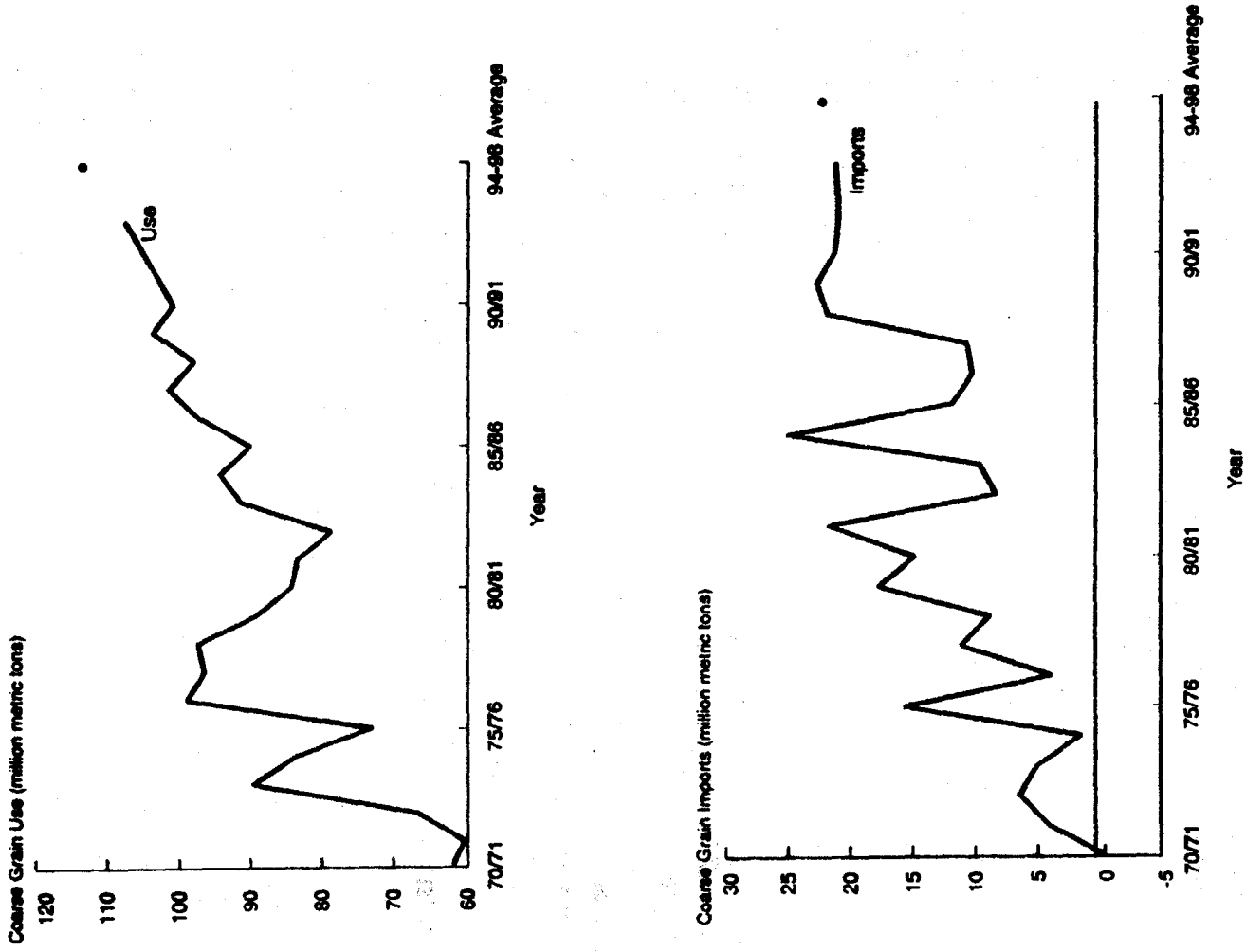
MACROECONOMIC POLICY

FAPRI's 1990 baseline projects moderate global economic growth in the near term, accelerating in the longer term; and a resurgence in Eastern Europe and the Soviet Union, Latin America, and Africa. There have been a number of analyses of macroeconomic scenarios using FAPRI and other systems. The most recent and detailed FAPRI evaluation of alternative macroeconomic conditions was with the 1988 baseline (S. R. Johnson and others 1989). The policy assumptions and the macroeconomic scenario for this analysis are similar to those for the current baseline. In fact, the major difference between the 1988 and the 1990 baseline was a higher level of initial stocks for major world agricultural commodity markets as an initial condition for the former; this level decreased precipitously in the interim due to the North American drought of 1988. To adjust for this difference in initial stock levels, the 1995 year is used as a reference for the present observations.

To evaluate the effect of alternative assumptions about growth in GDP, the FAPRI model was evaluated with growth rates greater than and less than the baseline assumptions summarized in table 4-5. Results for real U.S. gulf port prices are summarized in figure 4-8. In the crop year 1995/96 for the high growth option, real U.S. gulf port prices for wheat, maize, and soybeans increased 41, 45, and 52 percent, respectively, relative to the baseline. In the low growth alternative, these real prices declined by 31 percent for wheat, 30 percent for corn, and 31 percent for soybeans. These are dramatic changes in prices but not greater than those observed in the early 1970s when stocks were low and demand in international markets was high. The asymmetry between the magnitudes of changes in the high and low growth scenarios is due to the effect of agricultural policies (e.g. in the U.S. reducing supply by idling crop land) and the elasticities of demand and supply.

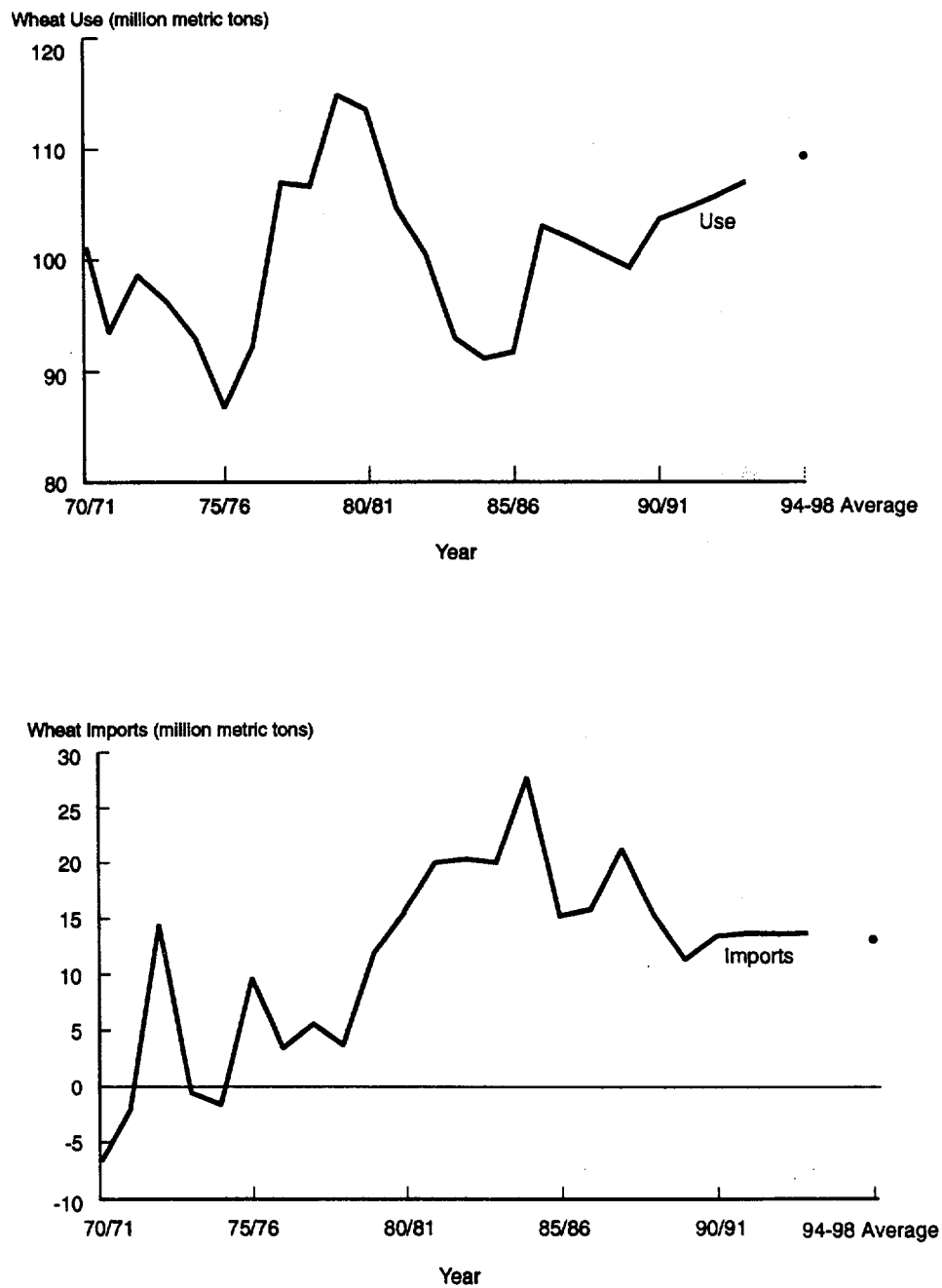
These results must be interpreted carefully. It is important to emphasize that the assumed agricultural policies were in general not permitted fully to respond to the macroeconomic conditions. A continuing surge in real agricultural prices would likely trigger increases in acreage, basic changes in commodity programs, and other policies, as in the early 1970s, ultimately dampening the real price increases. The interesting result is the suggested order of magnitude of the potential impact of the global macroeconomy on the international commodity markets. Clearly, policy intervention in domestic agriculture and trade in the developed nations (key factors in shaping prices in international commodity markets) is not flexible enough to accommodate major macroeconomic changes. The result of the rigidity implied by these policies and associated market distortions is an international agricultural commodity market that is less adaptive to macroeconomic shocks. This is one reason to anticipate the potential for near term

Figure 4-4. Soviet Union Coarse Grain Use and Imports, Historical and Projected



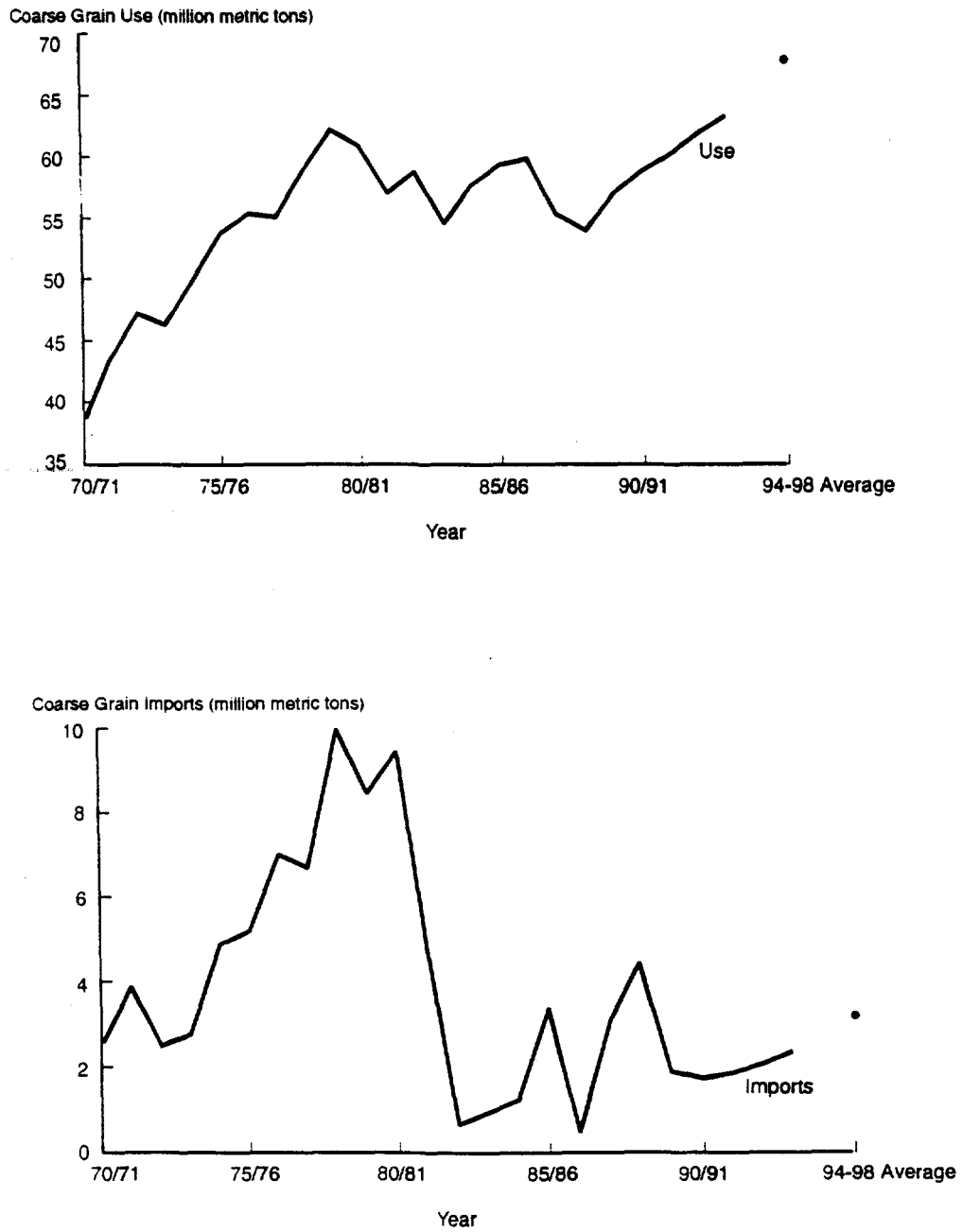
Source: FAPRI Baseline March 1990.

Figure 4-5. Soviet Union Wheat Use and Imports, Historical and Projected



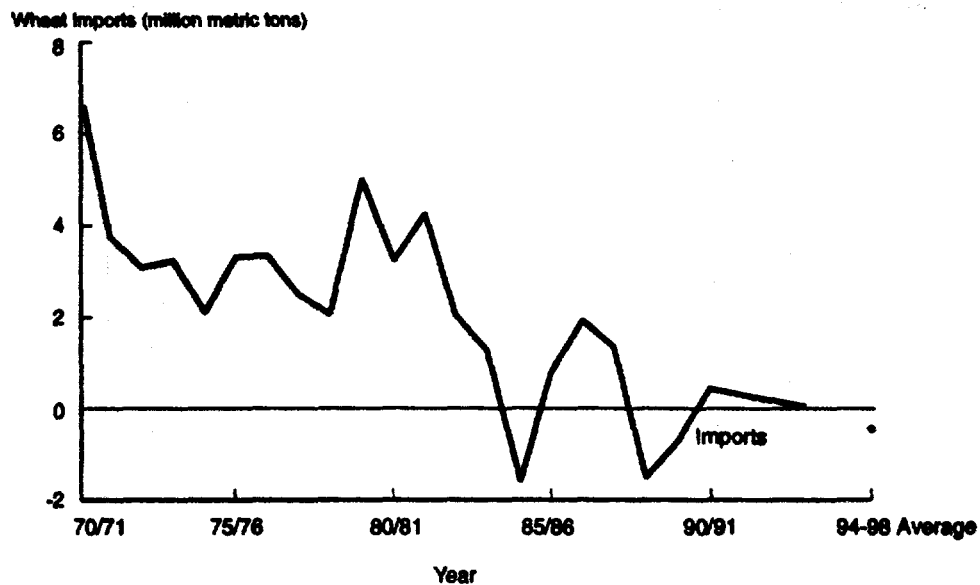
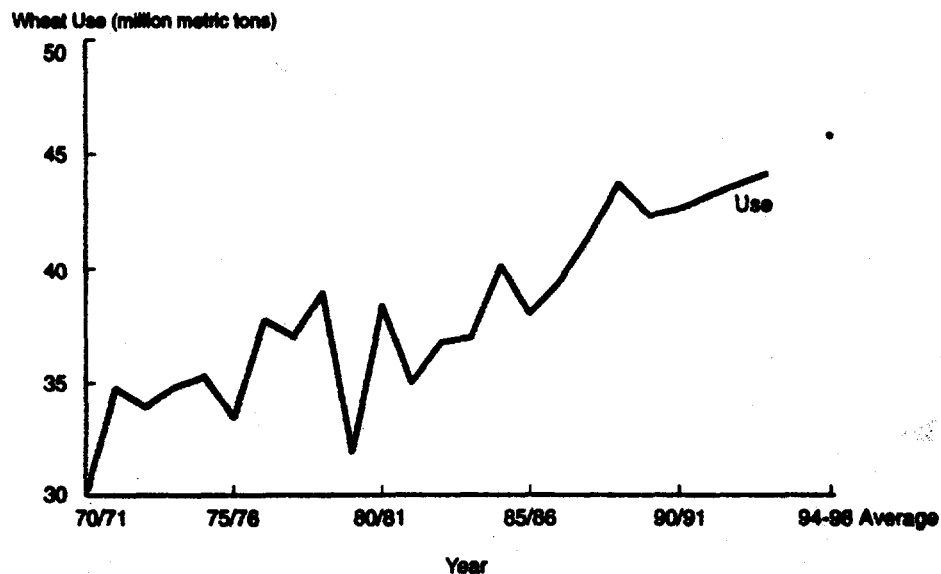
Source: FAPRI Baseline March 1990.

Figure 4-6. East European Coarse Grain Use and Imports, Historical and Projected



Source: FAPRI Baseline March 1990.

Figure 4-7. East European Wheat Use and Imports, Historical and Projected



Source: FAPRI Baseline March 1990.

price volatility, given the low stocks to use condition implied by the most recent FAPRI baseline.

DEVELOPING ECONOMIES

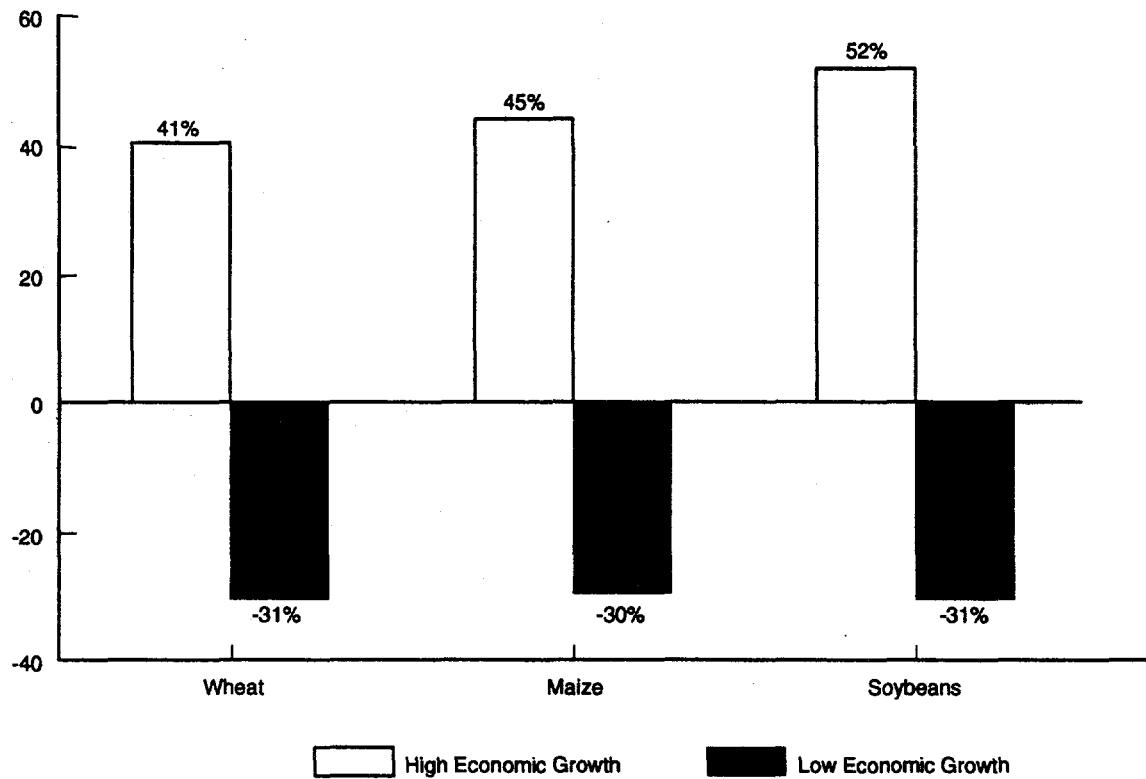
Recent analysis utilizing a FAPRI 1989 baseline (Angel and Johnson 1989) investigated the situation for the lower income developing economies in more detail. A striking result emerged from this closer assessment. Macroeconomic conditions and agricultural policy assumptions for the 1989 and 1990 FAPRI baselines are similar. The major difference was again the initial stocks. In this case, the focus was on income in the developing countries, and the rates of population growth that were incorporated. The economic growth projections for the international macroeconomy, although showing a recovery from the mid-1980s, are near or below population growth rates for many of the Near East, African, and Latin American nations. The result is that real income per capita in many of these countries is constant or decreases during the projection period.

Empirically-based estimates of productivity change and production response for developing countries in the FAPRI models imply that production increases less than does consumption. Baseline world prices are flat in real terms. Domestic supply elasticities are positive and low, and the most likely source of increased production would thus be improvement in technology. Most of these nations have domestic prices that reflect declining real international prices, and the technical or institutional change necessary to shift the domestic supply response functions does not seem to be occurring. If sustained at current rates, population increases imply significant increases in utilization even with reduced real incomes. The result is deteriorating food supply in these nations. As shown in figure 4-9, imports increase, but because of debt and foreign exchange limitations, low per capita income, and other factors, imports do not increase at a rate that matches the difference between utilization and production for most of the deficit nations. For Latin America, Africa, and the Middle East, per capita consumption declines, production per capita declines, and imports increase.

If these projections are correct, poor people in these nations will face worsening food shortages. The results raise questions about the financial capacity of these nations to import even at the levels projected by the baseline. Imports developing countries during the late 1980s have been to a large extent concessionary. Concessionary imports are generally high when stock levels are high (Hanrahan 1989; Mellor 1989; Minear 1989; Srinivasan 1989). The increasing cost of concessionary exports, at a time when poorer countries may find it difficult to pay even for imports to support declining per capita consumption, suggests an emerging problem of food security. Major political and economic changes may occur in these developing countries if food security deteriorates. Alternatively, growth in imports could be less than projected if current conditions in these developing nations continue unabated. This would result in slight downward pressure on international agricultural commodity prices compared with the baseline projections.

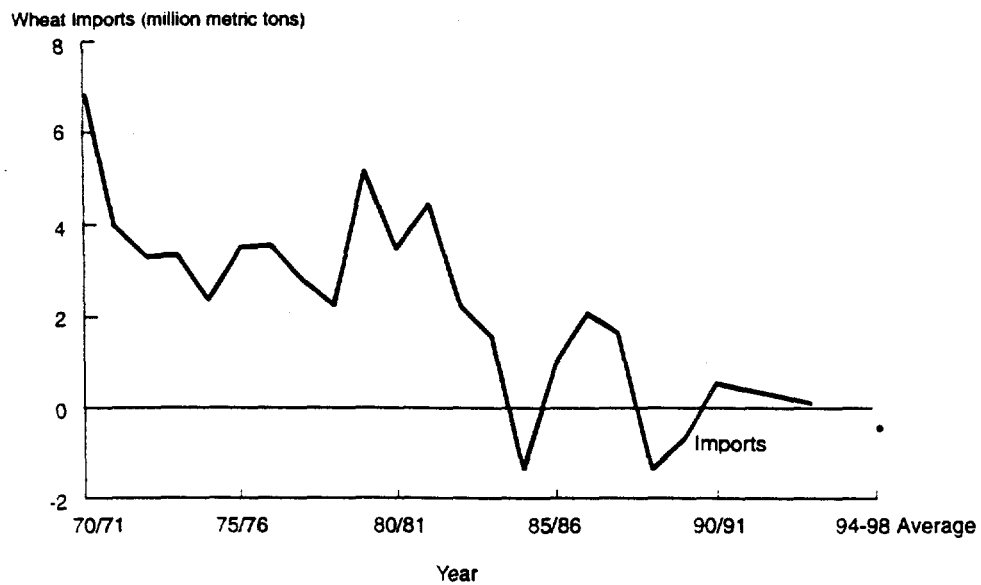
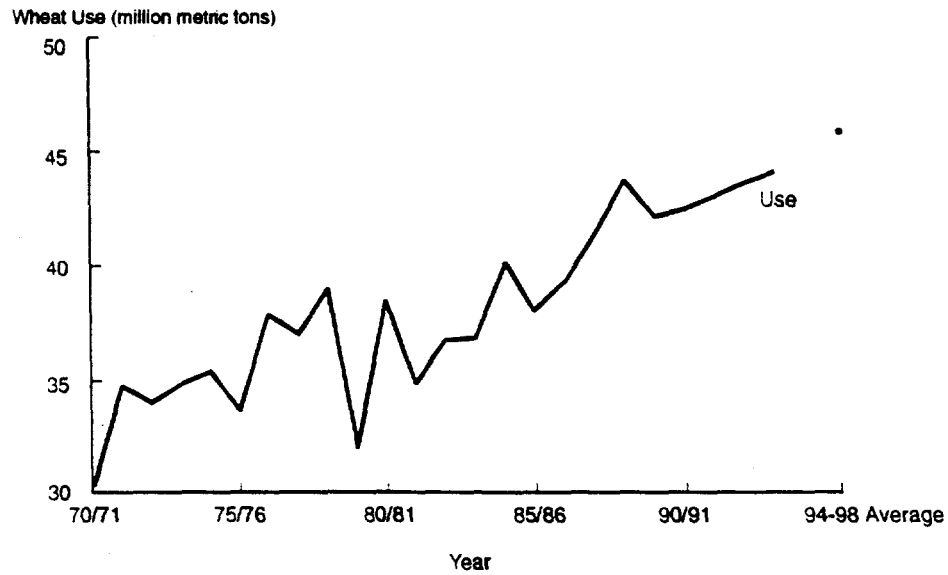
Figure 4-8. Projected Real (1988 dollars) U.S. Gulf Port Grain Prices for 1995/96

Percent Change in Real Prices, Compared to Baseline in 1995



Source: Johnson et. al. 1989.

Figure 4-9. Historical and Projected Per Capita Production and Consumption of Coarse Grains and Wheat in Latin America, the Middle East, and Africa



Source: FAPRI Baseline March 1990.

TRADE REFORM

A number of stylized analyses of multilateral free trade have been undertaken to anticipate consequences of the current GATT round (e.g. Johnson and others 1989). Generally, the results of these studies are consistent for coarse grains and food grains, and less consistent for oilseeds. For coarse grains and food grains, the results show that after a period of adjustment, world prices would increase between 10 and 20 percent. Results of studies of the impact of free trade on soybean prices are ambiguous and depend on assumptions about substitutability between oilseeds and coarse grains in supply and demand. Johnson and others (1989) found that free trade would reduce prices of soybeans and soybean products.

The GATT negotiations have generated speculation about reactions to a breakdown in the negotiating process. Among the outcomes could be a trade war between the U.S., EC, and other global agricultural commodity market participants. This does not seem likely given the budgetary pressures that are present in the EC, the U.S., and the developing countries that are principal exporters. Instead, the high values of aggregate measures of support that are the subject of negotiation appear to leave sufficient room for a successful even if delayed conclusion. If the GATT negotiations can be successfully concluded, reductions in barriers to trade in sectors other than agriculture could provide a powerful stimulant to economic growth. Work with the FAPRI model suggests that the impact of macroeconomic growth on agricultural commodity prices may be larger than direct effects of reduced subsidies in agricultural markets.

EASTERN EUROPE AND THE USSR

Systems for analyzing the effect of Eastern European and Soviet political and economic reforms on world agricultural commodity markets are few and analytically limited. Most of these systems rely on historical and empirical information reflecting past economic structures. At the same time, more specialized studies of the Eastern European and Soviet agricultural economies suggest that if the reforms provide increased flexibility and improved incentives for producers, agricultural efficiency can improve (see Skold and Popov 1990; and Brooks 1991). These optimistic albeit specialized results from studies of production and productivity as related to aspects of the economic reform must be balanced against the fact that (at least for the USSR) the action compared with the rhetoric about reform has been quite limited.

Conjecture and speculation about the ultimate impact of the market reforms in Eastern Europe and the USSR vary widely. Some observers emphasize increases in per capita income, suggesting that changes in food consumption patterns may emerge as the quality of the diet improves. Others note the high levels of food subsidy in these nations (particularly the USSR) and the fact that food consumption patterns, especially for meat and dairy products, are already similar to those of the higher income nations. For example, the Soviet per capita consumption of meat in 1989 was almost 70 kg compared with 93 kg in the United States.

Clearly, the final effect of the economic reforms on world agricultural markets will involve complex balance between income-induced changes in domestic consumption (levels and patterns), productivity increases for agriculture, and efficiency in the distribution system. Improvements in the efficiency of the distribution system and infrastructure will require major investment and development of institutions and infrastructure. These investments and changes will likely come slowly, since the short-run response to the political and economic changes will

be decreased economic growth. This means there will be less domestic income available for investment. Additionally, the political and economic uncertainties associated with the reforms will slow foreign private investment and government-backed development loans. Still, improved efficiency in the post-harvest processing and distribution system may significantly affect international commodity markets. Improvement in efficiency alone could have a significant impact on international commodity markets. Two alternative specifications of Soviet agricultural reform were incorporated into the FAPRI model, and the results were compared with price and trade flows of the baseline model. The two scenarios considered were a rationalization of procurement relative to international prices for cereals and oil seeds, and the same rationalization accompanied by a decrease in food subsidies. For the former, marked changes in import patterns emerge. Soymeal imports increase significantly, coarse grain imports remain about constant, and wheat imports decrease. This is a result of the use of higher protein rations for livestock feed, and a corresponding reduction in the use of wheat for livestock feed.

Adding the reduction in food subsidies significantly complicates the picture. In this case, there is a decrease in consumption of previously highly subsidized meat and dairy products. This in turn decreases the use of livestock feed. More wheat is used for human consumption, soymeal imports are strong in response to improved livestock rations, and coarse grains imports decline in response to a smaller livestock herd. Thus, the effect on international markets depends significantly on the sequence and scope of the economic reforms for agriculture and the food sectors. When and how consumer prices change makes a major difference.

Not all of the assessments of the political and economic reforms concentrate on simple changes in import patterns and their effects on international commodity markets. A quite likely possibility of the reforms is a major reduction in economic activity and short-term failure of the food production and distribution system as it changes over from a command to a market orientation. To stabilize the political and economic situation in this case, concessional food imports may be considered by the developed nations. Here the story is much like that for the developed low income countries. Stocks of cereals are low, the GATT will put pressure on export subsidies, and the availability of concessional exports from the developed agricultural nations may be more limited than in the late 1980s. Simply put, there is no pressure to reduce stocks that existed in the immediate past, and the FAPRI baseline does not suggest a future build-up of stocks. Consequently, concessional food imports, if they come, may be limited in quantity and duration.

GROWTH AND UNCERTAINTY

Trends in world agricultural commodity markets are highly influenced by domestic agricultural and trade policies and global macroeconomic growth. There is, in fact, an interesting interplay between macro- and sector-specific policy. Trade and domestic agricultural policies tend to change slowly, reacting to rather than anticipating macroeconomic changes. Entering the 1990s, the international commodity markets are set for change due to uncertainty of policy. To complicate matters, levels of current stocks suggest a significant increase in the potential for volatility in prices even without policy change. The FAPRI baseline shows continued decline in real prices of agricultural commodities, but in circumstances under which

shocks due to unanticipated changes cannot be buffered as in the 1980s by rapidly increasing acreage planted and/or reducing stocks.

Worldwide macroeconomic growth without recession seems increasingly unlikely given possible U.S. reactions to increasing budget deficits, the situation in the near East, continuing debt problems for the developing countries, and uncertainties about massive investment in Eastern Europe and the USSR. For agriculture, the developments and trends are generally positive. Trade reform can result in more efficient resource utilization. Restructuring in Eastern Europe and the USSR can provide improved and more diverse food supplies, and domestic policy adjustments in major developed western nations can lower subsidies and associated distortions. These changes in policy will require adjustments in agriculture and rural communities similar to those in the past, freeing labor and other resources for use in other economically productive activities, but implying costs for those directly involved in agriculture.

For Eastern Europe and the USSR, continued dependence on world commodity markets seems likely. Changes in the mix of imports may be the first of the impacts of the economic and political reforms; reductions in wheat imports and increases in coarse grains and soybean meal imports seem likely. However, the fundamental political and economic reforms in these nations will take time, and if they are successful will have to involve not only agriculture, but other sectors of the economy.

REFERENCES

- Angel, Bruna, and S. R. Johnson. 1989. "Changing Organization and Operation of International Food Markets and Agriculture in the 1990s—Implications for Developing Countries." Center for Agricultural and Rural Development (CARD), Iowa State University. Workshop on "World Food, Trade, Food Security and Food Aid in the 1990s," Washington, D.C.
- Braverman, Avishay, Jeffrey S. Hammer, and Anne Gron. 1987. "Multimarket Analysis of Agricultural Price Policies in an Operational Context: The Case of Cyprus." *The World Bank Economic Review* 1 (January), pp. 337–56.
- Brooks, Karen. 1991. "Price Adjustment and Land Valuation in Soviet Agricultural Reform: A View Using Lithuanian Farm Data." *European Review of Agricultural Economics* 18 (January), pp. 19–36.
- FAPRI. 1990a. "FAPRI 1990 U.S. Agricultural Outlook." The Food and Agricultural Policy Research Institute Staff Report no. 1-90 (March).
- _____. 1990b. "FAPRI 1990 World Agricultural Outlook." The Food and Agricultural Policy Research Institute Staff Report no. 2-90 (March).
- Fischer, G., and K. Frohberg. 1982. "The Basic Linked System of the Food and Agriculture Program at IIASA: An Overview of the Structure of National Models." *Mathematical Modeling* 3, pp. 453–66.

- Hanrahan, C.E. 1989. "Foreign Food Aid: Reauthorization Issues." Congressional Research Service Issue Brief Order ODE IB89097 (Updated May 23, 1989). Washington, D.C.: The Library of Congress.
- Hildreth, C., and F.G. Jarrett. 1955. *A Statistical Study of Livestock Production and Marketing*. New York: John Wiley.
- Johnson, D. Gale. 1973. *World Agriculture in Disarray*. London: Macmillan.
- Johnson, S. R. 1986. "Doable General Equilibrium Models: Discussion." *American Journal of Agricultural Economics* 68(5), pp. 1217-18.
- Johnson, S. R., William H. Meyers, Patrick Westhoff, and Abner Womack. 1989. "Agricultural Market Outlook and Sensitivity to Macroeconomic, Productivity and Policy Changes." Proceedings of the Twentieth International Conference of Agricultural Economists, Buenos Aires, Argentina.
- LINK. 1989. *Project LINK World Outlook, August 28, 1989*. Philadelphia: University of Pennsylvania, Department of Economics; New York: United Nations, Department of International Economic and Social Affairs.
- Mellor, W. J. 1989. "Agricultural Development in the Third World: The Food, Poverty, Aid, Trade Nexus." *Choices*, First Quarter.
- Minear, L. 1989. "U.S. Food Aid: Give Priority to Human Needs." *Choices*, Second Quarter.
- OECD. 1987. "Multilateral Trade Model (MTM)." Working Paper. Paris.
- Skold, Karl, and Victor N. Popov. 1990. "Technical Efficiency in Crop Production: An Application to the Stavropol Region, USSR." Center for Agricultural and Rural Development Working Paper no. 90-WP-64, Iowa State University, Ames, Iowa.
- Srinivasan, T. N. 1989. "Food Aid: A Cause of Development Failure or an Instrument for Success?" *World Bank Economic Review* 3(January), pp. 39-65.
- Taylor, B., et. al. 1990. *AAEA Agricultural Modeling Symposium*. Ames, Iowa: Iowa State University Press.
- WEFA (Wharton Econometric Forecasting Associates). 1989. *July 1989 World Economic Outlook*. Bala Cynwyd, Penn.: WEFA.

UNITED WESTERN EUROPE AND THE AGRICULTURE OF CENTRAL AND EASTERN EUROPE AND THE USSR

*Stefan Tangermann**

Agricultural trade is only one of the many elements of political and economic relations between Eastern and Western Europe,¹ and in purely statistical terms its significance is rather limited. Trends in agriculture and in agricultural trade have in some periods of European history reflected much more general developments, however. Different political and economic developments since World War I have had dramatic consequences for the way in which agriculture has developed in Eastern and Western Europe, and these highly divergent developments have been very much reflected in agricultural trade.

On the eve of World War I, Eastern Europe was the continent's bread-basket. "Russia was the world's largest total exporter of grains, . . . second to Russia in the volume of grain exports were the Danube Countries." (Stern 1960, p. 50). In the period 1909–13, average annual net grain exports of Bulgaria, Hungary, Romania, Russia, and Serbia, taken together exceeded 16 million tons. Most of these grain exports went to countries in Western Europe, particularly to Great Britain. Aggregate annual net grain imports of Belgium, France, Germany, Great Britain and Ireland, and the Netherlands were above 21 million tons in the same period (export and import figures calculated from von Dietze 1929). Together with grain imports from the "New World," above all North America, food supplies from Eastern Europe were an important factor in Western Europe's industrial growth. As Stern has noted, "one could well speculate on what might have been the course of Western European economic development, had not this vast outpouring of food exorcised the Malthusian specter and been transmogrified into products of industry." (Stern 1960, p. 55)

One might, however, equally speculate what the food situation and the political and economic conditions in Eastern Europe, particularly in the Soviet Union, might now be if North

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¹ The term "Eastern Europe" is used in different ways in the literature and statistics. It usually includes the six smaller European members of the former CMEA, i.e. Bulgaria, Czechoslovakia, the GDR, Hungary, Poland, and Romania. It sometimes also includes the USSR. In this paper, the term "Eastern Europe" includes the USSR unless explicitly stated. As some people have rightly pointed out, the region should more appropriately be called Central and Eastern Europe.

America and Western Europe had not produced large cereal surpluses in recent times. In the 1985/86–1987/88 period, annual average net grain imports of the Soviet Union and Eastern Europe exceeded 32 million tons, while EC net grain exports were above 15 million tons (calculated from FAO 1989). Against this background, it is equally tempting to consider why agricultural and food developments in the Eastern and the Western parts of Europe have diverged so much, and in particular to consider the influence of the fundamentally different political and economic systems.

Only on the basis of such consideration could one guess the future of agricultural relations between Eastern and Western Europe. The current dramatic and happy changes in Eastern Europe are creating a completely new environment for the agricultural and food economy of these countries. The outcome of these reforms is difficult, if not impossible, to predict.

At the same time, agricultural policymakers in Western European countries have embarked on what they call a "reform" of their agricultural policies (though use of the term "reform" in this context is plainly ridiculous when the same term is used for the revolutionary and fundamental changes in the political, social, and economic systems of Eastern Europe). Moreover, the European Community is in the midst of a process of growing even closer together, primarily in economic, but also in political terms.

What the result of the revolutionary changes in Eastern Europe and the evolution of Western Europe may be, whether and how these developments may influence each other, and how agricultural trade between Eastern and Western Europe will be affected, is far from clear. It is obvious that answers to these and many subsidiary questions are both highly important and extremely speculative. This paper begins on relatively firm ground by examining some statistical facts regarding agricultural trade between Eastern and Western Europe in the next section, and following that, speculates about market developments in Eastern Europe. The third portion offers observations regarding implications for European Community policy. Finally, comments regarding current agricultural developments in the united Germany and their possible implications for the pursuit of East-West agricultural trade may further stimulate controversy in this field.

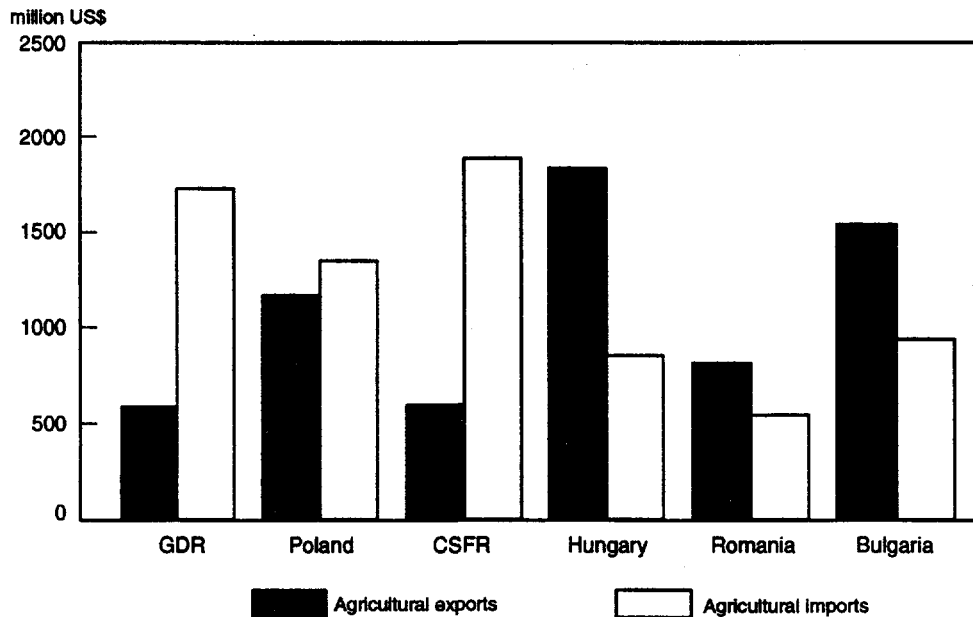
STRUCTURE OF TRADE FLOWS

The agricultural trade balance differs significantly among individual countries in Eastern Europe. In 1987, Czechoslovakia, the GDR, Poland, and the USSR were net agricultural importers, while Bulgaria, Hungary and Romania were net exporters of agricultural products (graphs 5-1 and 5-2). The roughly US\$14 billion² agricultural net import bill of Eastern Europe in 1987 largely reflected the net imports of the USSR, since agricultural trade of the other East European countries was almost in balance.

Somewhat surprisingly, agricultural trade is not in general more significant for Eastern Europe, relative to overall merchandise trade, than it is, for example, in the European Community or in the United States (graph 5-3). In Bulgaria, Hungary, Poland and Romania, agricultural exports make up around 10 percent of total merchandise exports, not much different

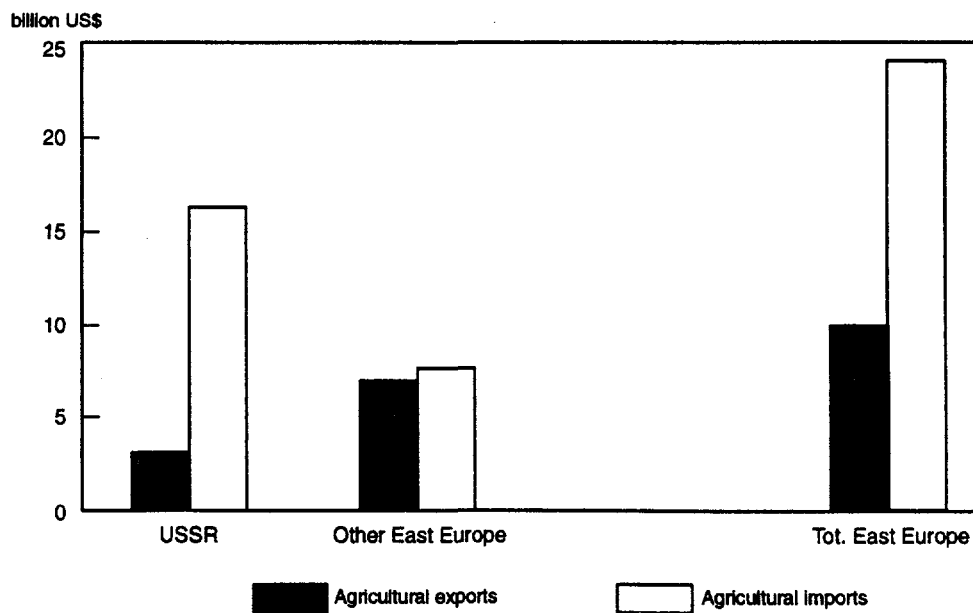
² A billion is 1,000 million. Unless stated otherwise, all dollar amounts are current U.S. dollars.

Graph 5-1. Agricultural Trade of East European Countries, 1987



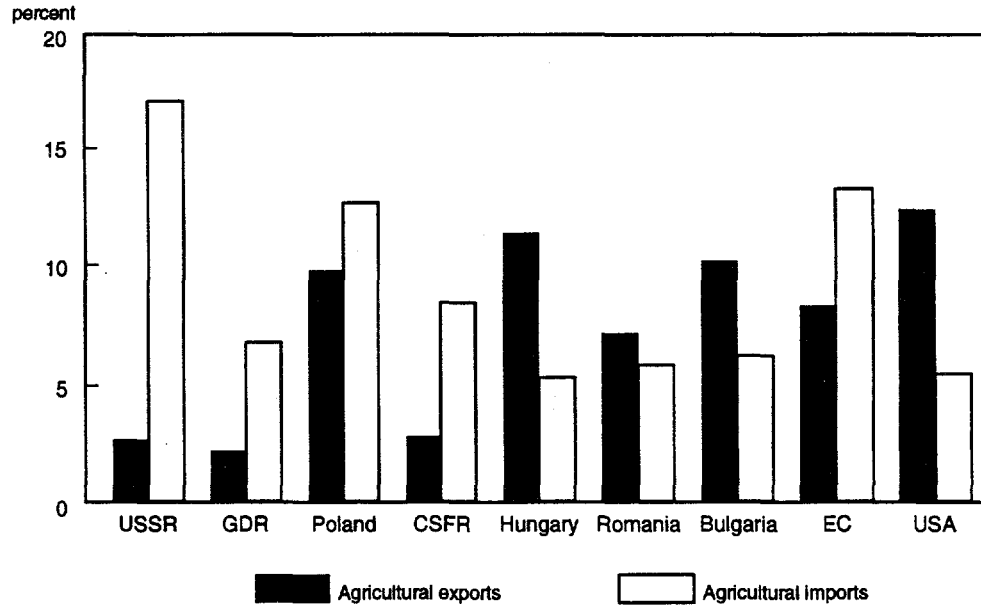
Source: FAO Trade Yearbook 1987.

Graph 5-2. Agricultural Trade of the USSR and Eastern Europe, 1987



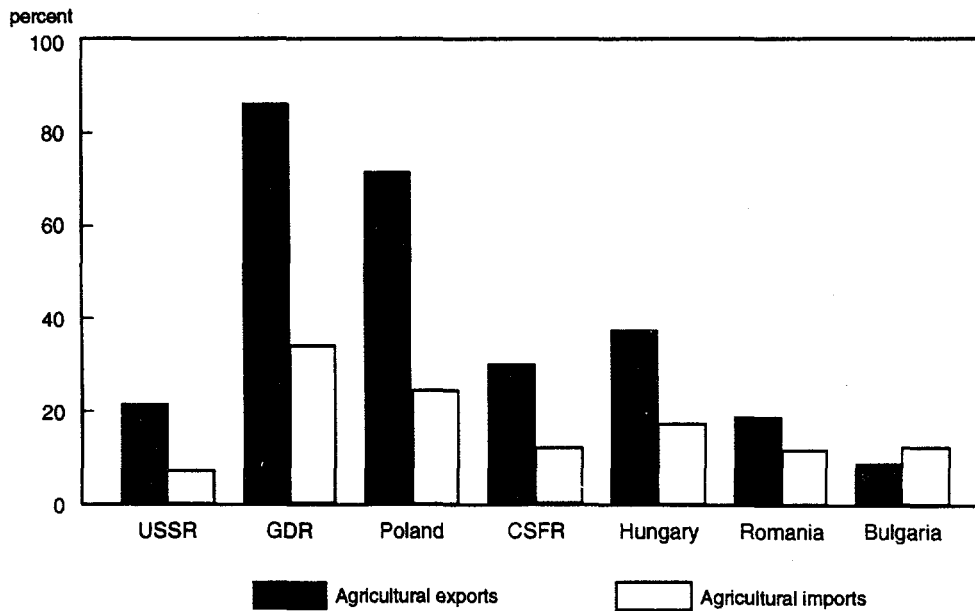
Source: FAO Trade Yearbook 1987.

Graph 5-3. Share of Agricultural Trade in Total Merchandise Trade, 1987



Source: FAO Trade Yearbook 1987, GATT International Trade 1988-89, Vol. II.

Graph 5-4. EC Share of Total Agricultural Trade of East European Countries, 1987



Note: Figures include trade between the German Democratic Republic and the Federal Republic of Germany.

Source: UN Economic Commission for Europe and FAO 1989.

from the EC and the U.S. However, this statistical similarity should not be interpreted to indicate similar natural, economic, or agricultural policy conditions among the East European countries. In the USSR, the GDR, and Czechoslovakia, on the other hand, agricultural exports contribute significantly less to export earnings.

At the same time, the one-sixth share of agricultural imports in the USSR's total imports is relatively high. As in Western countries, the share of agricultural products in total trade of Eastern Europe has declined over time, between 1980 and 1988 from 10.5 to 8.5 percent on the export side and from 20 to 13.5 percent on the import side (GATT 1990, p. 21).

Agricultural trade with the EC differs markedly among individual countries in Eastern Europe. More than three-quarters of all agricultural exports from Poland and the GDR go to the EC, while exports to the EC are less than a quarter of all agricultural exports from the USSR, Romania, and Bulgaria (graph 5-4). With the exception of Bulgaria, links with the EC are much stronger on the export side than on the side of imports of Eastern European countries.

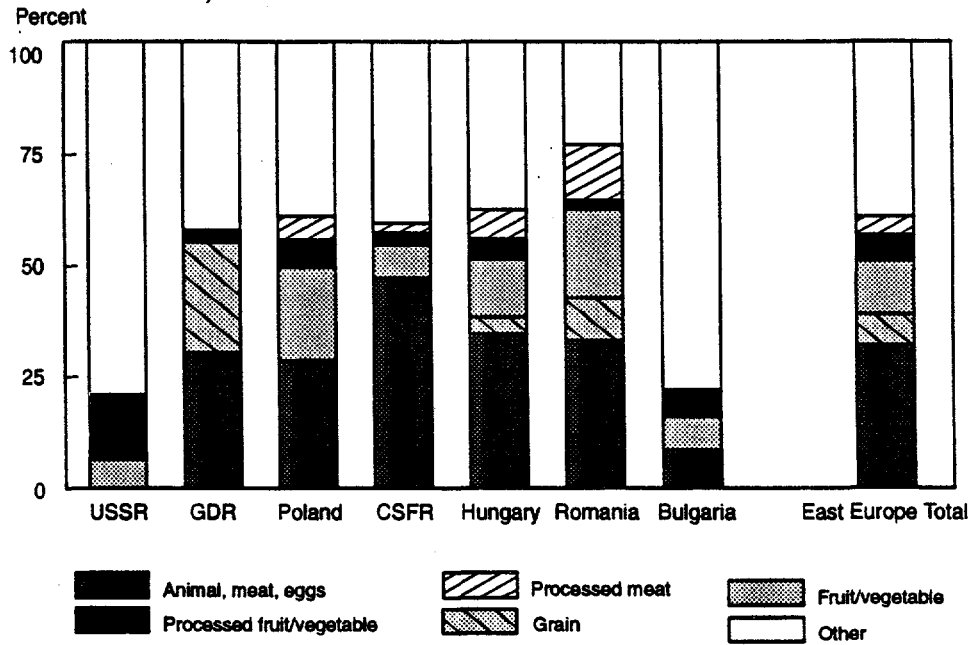
There are also differences in the product composition of agricultural trade with the EC. Live animals, meat (including offal), and eggs are important components of every East European country's exports to the EC, except for the USSR (graph 5-5). Fruit and vegetables are also significant, except for the USSR and the GDR. The export share of processed fruits and vegetables and processed meat is generally still low compared with that of unprocessed products. Country differences in product composition are more pronounced on the side of imports from the EC. In the USSR and Poland, a large part of imports from the EC (around one half) is in the form of grain; imports of oilseeds, oilmeals, and vegetable oils figure prominently in the GDR and the USSR (graph 5-6), while fruit and vegetables are important imports in Czechoslovakia, Hungary, and Poland. The broad product categories shown here may, though, conceal significant differences in imports of more narrowly defined types and qualities of individual products. This is suggested by pronounced differences in unit values of exports to the EC for some individual product categories (graph 5-7).

POSSIBLE DEVELOPMENTS IN EAST EUROPEAN AGRICULTURE

The future of agricultural trade between Eastern and Western Europe will be affected by trends in food consumption and agricultural production in Eastern Europe, among other things. These trends are extremely difficult to predict, and they will certainly differ very much between individual countries. Moreover, some developments may not be continuous, and short-term changes during the adjustment period in the next few years may differ (not only in extent but also in direction) from the longer run trends resulting from fundamental political and economic reforms. Which longer run trends will emerge from this adjustment period is largely a matter of speculation. One possible scenario follows.

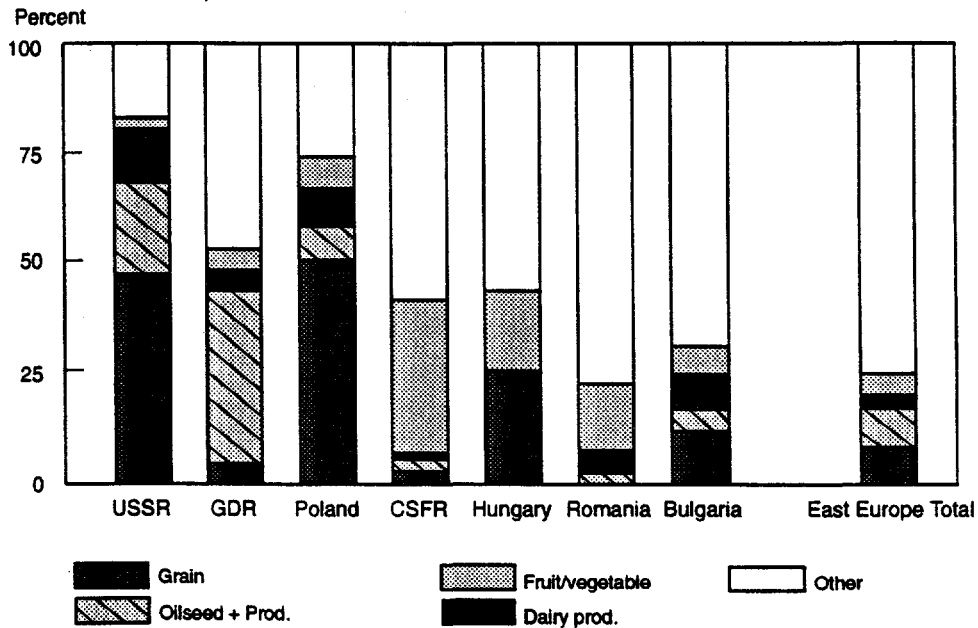
As a result of the reforms in Eastern Europe, overall economic growth will accelerate, and the standard of living will improve. The major consequence for food consumption may be a shift in the structure of demand rather than an increase in the overall amount of food consumed. This hypothesis is based on the impression that when the economic reforms began, food consumption in Eastern Europe (in purely quantitative terms) was high for the level of economic development.

Graph 5-5. Product Composition of East European Agricultural Exports to the EC, 1987



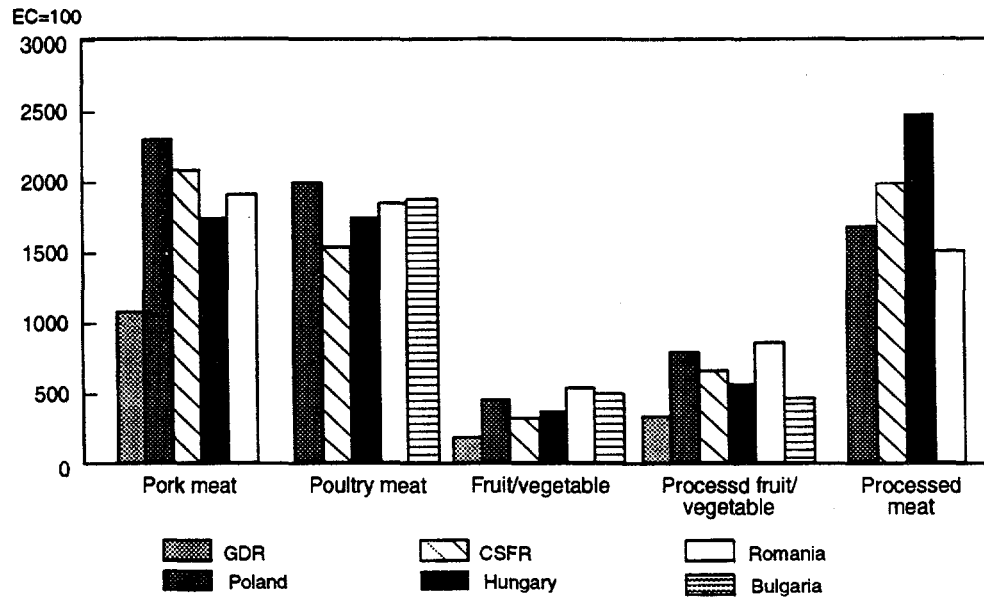
Source: EUROSTAT 1989. Agricultural trade between the German Democratic Republic and the Federal Republic of Germany has been added to these EUROSTAT statistics, on the basis of figures from Statistisches Bundesamt, Fachserie 6, Reihe 6, and from the Federal Ministry for Food, Agriculture and Forestry.

Graph 5-6. Product Composition of East European Agricultural Imports from the EC, 1987



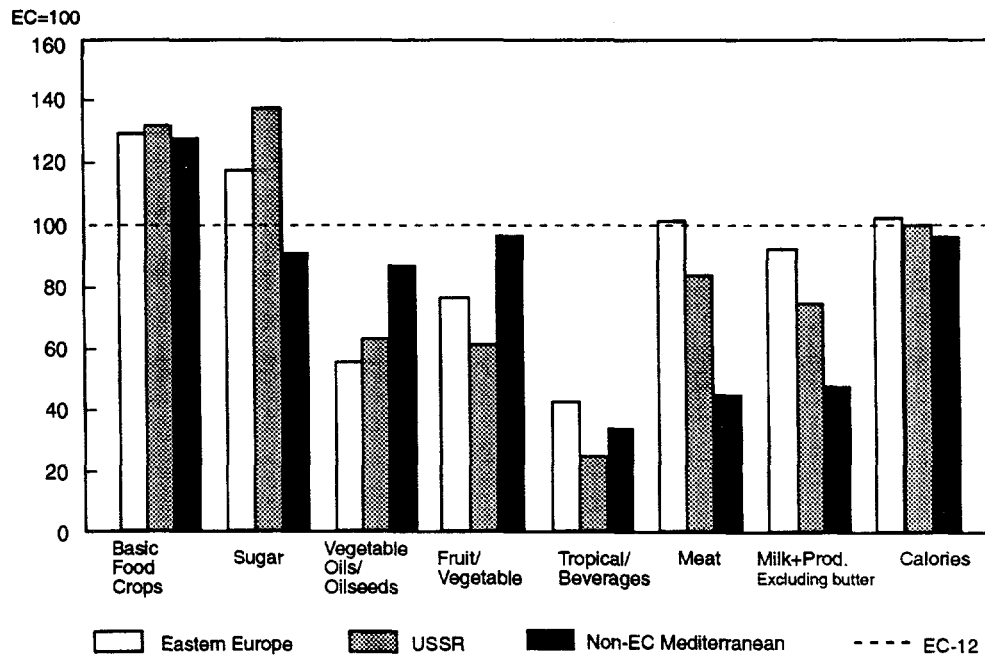
Source: EUROSTAT 1989. Agricultural trade between the German Democratic Republic and the Federal Republic of Germany has been added to these EUROSTAT statistics, on the basis of figures from Statistisches Bundesamt, Fachserie 6, Reihe 6, and from the Federal Ministry for Food, Agriculture and Forestry.

Graph 5-7. Unit Values of East European Agricultural Exports to the EC, 1987



Source: EUROSTAT 1989. Agricultural trade between the German Democratic Republic and the Federal Republic of Germany has been added to these EUROSTAT statistics, on the basis of figures from Statistisches Bundesamt, Fachserie 6, Reihe 6, and from the Federal Ministry for Food, Agriculture and Forestry.

Graph 5-8. Food Consumption as a Percent of EC Food Consumption, 1984/86



Source: FAO 1988.

Statistics on economic conditions in Eastern Europe appear to be notoriously unreliable, and statistics on food consumption are no exception. Moreover, methods differ both among Eastern European countries and between those countries and Western Europe. For a number of reasons, actual food consumption in Eastern Europe may have been less than reported in official statistics. In the case of bread, for example, wastage in households has resulted from artificially low prices; as a consequence of price reforms, wastage will be reduced, thus diminishing market demand. Using this logic, statistical deficiencies do not change the conclusions drawn here.

The quantity of some categories of food consumed appears to have been high in relation to income levels. As graph 5-8, based on FAO (1988) statistics, indicates, overall food consumption, as measured in calories per capita per day, in both the USSR and the remaining Eastern Europe was roughly comparable with that in the EC (of twelve member countries) and possibly above that in non-EC Mediterranean countries. (Non-EC Mediterranean countries have been included in this comparison because their level of income may be closer to incomes in Eastern Europe, although the composition of food demand in these various countries is certainly different.) Consumption of basic food crops (cereals, pulses, potatoes, and other root crops) and sugar was significantly higher than in other European countries; consumption of meat and dairy products in the USSR was below that in Western Europe, but in the rest of Eastern Europe it was not much different from West European countries. Consumption of vegetable oils, fruit, vegetables, and tropical beverages, on the other hand, was far below that in West European countries.

A number of factors explain why consumption of some basic food categories in Eastern Europe was high relative to the general standard of living. Some of the more important economic factors are that prices of basic food items have been heavily subsidized in many cases (at least compared with domestic production costs), incentives to save have been low, and limited availability of other consumer goods has distorted consumption patterns towards higher consumption of food.

Such factors will change significantly in the years to come; they have already begun to do so. Essentially, consumers will be confronted with the real purchasing power of their earnings in newly convertible currencies. They will find that their incomes are much lower than they expected, and that food is much more expensive. Governments of East European countries are being pressed to reduce their budget deficits, and as a consequence they have to cut food subsidies. Rising food prices cause serious political concern. But governments may try to save by switching from price subsidies to direct transfers to vulnerable groups (in analogous to "decoupling" in Western countries' agricultural policies). Moreover, the opening up of markets will make a wider choice of consumer goods available, and consumption will turn away from overemphasis on food. This is not to say that demand for certain types of food will not grow significantly. In particular, there will be growth of demand for higher quality vegetables and fruit, specifically citrus and tropical fruits; for tropical beverages; superior types of meat; and processed foods. On the other hand, demand for basic food crops and sugar is likely to decrease, and the same may happen to the overall quantity of meat and dairy products consumed (though demand for higher qualities within these categories may increase).

As far as demand for staple foods is concerned, this scenario may appear to be at odds with the fact that in some East European countries there is an apparent shortage of some types of food, as evidenced by food rationing and occasional queuing in front of shops. Moreover, it

may appear to be inconsistent with the perceived need for, and the actual current practice of, providing food aid to some East European countries. This apparent inconsistency will be addressed later.

Projections of possible production trends in Eastern Europe are at least as speculative as demand projections. There are, however, a number of reasons to expect that the ongoing reforms will, after an adjustment period, increase productivity and probably also increase production levels in East European agriculture. Some of the major factors cited to support this hypothesis are: improved resource allocation with the removal of bureaucratic central planning; strengthened incentives as a result of privatization; more appropriate price structures; better availability of inputs and capital goods and more ready credit facilities; improved efficiency in the livestock industry as a result of more appropriate feeding practices; availability of better genetic varieties and breeds; and reduction of losses and waste as a result of improvements in the logistic infrastructure.³ The difficulties of achieving such improvements will be enormous, and it will take quite some time before they become effective. But there is now hope that such changes will occur. Indeed, they are already underway in many cases.

Not all of the efficiency improvements that may take place in East European agriculture will actually lead to increased supplies. Some of them will reduce the amount of inputs and resources used for a given amount of output. Moreover, the need to be more concerned about resource conservation and ecological issues may limit the potential growth of agricultural output in some areas. However, it would be surprising if the joint result of all such changes was not growth in the potential of the East European agricultural and food industry to produce and supply agricultural and food products. After all, in both physical and economic terms there is no fundamental reason why Eastern European agriculture should not, in the longer run, raise its agricultural productivity closer to the much higher level achieved by Western Europe—if the political and economic environment allows it to do so.

Existing projections of import demand and export supply in Eastern Europe for the rest of this century differ significantly among authors.⁴ The possible consequences of the recent and future reforms have generally not been included in such projections, simply because the reforms are so new. In what appears to be essentially an absence of analyses of the possible trade effects of reforms in Eastern Europe,⁵ this paper speculates on some trade implications of the scenario sketched out above.

Eastern Europe's import demand for cereals could be significantly lower than it might have been in the absence of reforms. One has to remember the trivial fact that the multiplier of production on net trade can be high. With net grain imports of around 30 million tons and grain

³ The importance of such factors, their possible contribution to productivity growth, and also the difficulties of achieving such improvements are highlighted, in the case of Polish agriculture, in the report of the Field Mission to Poland 1989.

⁴ Some of these projections are reviewed in Schmidt 1989. For more projections and a discussion of policy issues, see Alexandratos 1988 (pp. 96-103), and FAO 1988.

⁵ As the FAO (1990, p.18) recently stated, "the possible agricultural trade impact of policy reforms in Eastern Europe and the USSR is a subject which has not been adequately researched but which is receiving increasing attention."

production around 300 million tons in Eastern Europe, an increase in (usable) production of 1 percent results in a reduction of net imports by 10 percent. Import demand for oilseeds and protein feeds, on the other hand, may well expand if increasing demand for vegetable oils and growing use of protein feeds (in order to correct feed formulas) outpaces growth of oilseed production in Eastern Europe. However, it is doubtful whether import demand for oilseeds and protein feeds will increase more than import demand for cereals may go down. Net sugar imports could decline, rather than remain stable as some projections have suggested (FAO 1988). Net exports of meat, which currently are a minor fraction of aggregate meat production in Eastern Europe, could grow significantly beyond what they might have been in the absence of reforms. Imports of tropical fruit and beverages may expand rather rapidly. Growing food consumption of other fruit and vegetables may be largely met by production increases in Eastern Europe.

In addition to such changes of aggregate trade balances, there may be significant changes in the regional pattern of trade flows. With the disappearance of the CMEA and the switch to hard currencies for trade among its former members, completely new conditions emerge. For the time being, the effect of these changes on agricultural trade among East European countries is far from clear.

A number of factors speak for more intensive agricultural trading links among East European countries. Now that hard currency can be earned by exporting to other countries in Eastern Europe and to the Soviet Union, it is more attractive to ship there; given the low quality of some food processing and marketing activities in Eastern Europe, it will be easier to sell to markets where quality expectations of consumers are still low; and low prices give Eastern European foods a price advantage in markets of other East European countries.

But other factors speak for a decreasing role of intra-East European trade in agriculture. Since imports have now to be paid for in hard currencies anyhow, there is no reason for the importing countries (including the Soviet Union) to give preference to imports from other East European countries. Western countries have all the marketing facilities (including the large multinational trading companies) that make it so much more convenient to buy from them. Furthermore, with a lack of hard currency reserves, the availability of export credit will be an important consideration in deciding where to buy, and export credit is scarce in East European countries. Finally, the preferential access to their markets which Western countries are beginning to grant to Eastern Europe will attract shipments to these higher priced markets. The preferential shipments of sugar from some developing countries to the EC, which eventually result in higher EC sugar exports, are an example of the type of distortions of regional trade flows that could result from preferential access.

In the short run, the immediate result of the disappearance of the CMEA and the switch to hard currency trade appears to be that intra-East European agricultural trade, in particular Central and East European exports to the Soviet Union, will face significant difficulties. Hard currency allocation to Soviet importers is unreliable. The banking system in the Soviet Union is not able to deal with hard currency transactions. The role of the Soviet Republics vis-a-vis the Union is not yet clear in international trade. New trade barriers have been erected in East-East trade, but the customs authorities are not yet able to administer them. Such difficulties have led to near collapse of some parts of intra-regional trade; some Central European countries are considering switching to barter arrangements for trade with the Soviet Union.

It will take some time before these uncertainties regarding the regional direction of agricultural trade flows of East European countries are removed. Before then it is impossible to say whether any net impact on the agricultural trade balance with Western countries will result from such changes in the regional trade pattern. On the other hand, agricultural trade between Eastern Europe and the Third World, which used to be highly concentrated in a small number of developing countries, will certainly diversify, so that both a larger number of developing countries and a wider variety of products are included (see FAO 1990, pp. 17-18).

IMPLICATIONS FOR EUROPEAN COMMUNITY POLICY

In this scenario, there is no reason for the EC to prepare to meet a rapidly growing food demand in Eastern Europe. On the contrary, as far as agricultural raw materials (as opposed to processed foods) are concerned, there may be less demand for some commodities that the EC exports (cereals and sugar) and more export competition for others (meat). As far as the growing import demand for vegetable oil and protein feed in Eastern Europe is concerned, the pressure to limit oilseed production in the EC may be somewhat reduced. Growing East European imports of tropical fruit and beverages may, on the other hand, allow the developing countries that export these to somewhat expand their imports of temperate zone agricultural products. However, this would be unlikely to compensate fully for the loss of markets for these products in Eastern Europe.

In other words, the "reforms" of its CAP on which the EC embarked in the middle of the 1980s are not less, but even *more* urgent as a consequence of the changes taking place in Eastern Europe. As argued elsewhere (Tangermann 1989 and 1990), some elements of the latest round of CAP reform have the potential of leading to a more rational (or rather, slightly less uneconomic) pursuit of agricultural policies in the EC. The major elements in this category are the quasi-automatic price cuts introduced through the "stabilizer" schemes adopted in 1988, and the limit to agricultural spending (the "budget guideline") introduced at the same time. Other elements lack economic logic, but have proven politically attractive to agricultural policymakers. The milk quotas (introduced in 1984) and set-aside (adopted as part of the 1988 "reform" package) belong to that category. Though such policy adjustments will not improve resource allocation in the EC, they still tend to limit the damage which the Common Agricultural Policy does to international trade.

As of the spring of 1991, it looks like the EC may launch a more fundamental reform of its CAP. The changes that Commissioner for Agriculture MacSharry has proposed would reduce price support for some core products considerably and place more emphasis on "decoupled" forms of income support, through direct payments to farmers. However, it is far from certain whether these proposals will be accepted by EC ministers for agriculture, or whether other types of policy changes will be implemented that would resolve the imminent budget crisis in the EC without leading to a more economically rational pursuit of the CAP.

The EC's trading partners, among them Eastern Europe, will not be very interested in the internal economic justification of the particular type of agricultural policy adjustments adopted by the EC. For them, it is more important whether the EC is firmly committed to its agricultural policy "reform" endeavors. At present this commitment is unfortunately less than perfect. In particular, neither the "stabilizer" schemes nor the "budget guideline" are so far certain to stick (Tangermann 1988 and 1990). It is important that the EC's agricultural

policymakers are firmly locked into their own reform promises. The ongoing agricultural negotiations of the Uruguay Round come at an extremely important point in the process of the EC's internal agricultural policy adjustments. They add significantly to the incentives (or pressure) required to continue the effort to reduce agricultural support and protection in the EC.

What is the relationship between developments in Eastern Europe and the EC's efforts to complete its internal market by 1992? As far as agriculture is concerned, the link between these two developments is probably rather weak. As argued elsewhere (Tangermann 1990), the 1992 program is unlikely to change much in the area of food and agriculture, contrary to what is sometimes felt outside the Community. The major reason is that agricultural and food markets have already been well integrated in the EC for quite some time. Some minor restrictions to intra-EC trade in processed foods and some agricultural inputs will be abandoned in the course of the internal market process, but this is unlikely to affect the nature of Europe's food market very significantly.

As far as agriculture per se and trade in unprocessed agricultural commodities is concerned, the impact of 1992 will probably be even less. It could potentially be large if Europe's "Green Money," i.e. the special agricultural exchange rates used in the EC, were to disappear after 1992. But ridiculous as it appears for what is called an internal market, it does not look like this will happen (Tangermann 1990). It is unlikely that much will change after 1992 in agricultural and food markets in the EC.

If the EC internal market is going to have any impact at all on third countries in the area of agricultural and food trade, it will be that selling to the EC will be slightly easier, because product standards and the like will be more harmonious among EC member countries. Hence for a third country wishing to export to the EC, the same product can be shipped to all EC members. Once the product has entered the EC market at any point, it can then freely circulate throughout the entire Community.

A more indirect effect of the EC's efforts to foster economic and political integration among the member countries (including the planned creation of a Political Union and an Economic and Monetary Union) may be that such efforts provide a new focus of interest and thereby may distract attention from the Common Agricultural Policy. Agricultural policy, which for such a long time has been at the center stage of Community policies, may therefore become more "normal" in the sense of being just one of the many Community activities. At the same time, in the course of this development, the weight of the European Commission may further increase relative to that of the Council of Ministers. Since the Commission has for some time tended to adopt a more market-oriented attitude to agriculture than the Council, this may further enhance chances of the Common Agricultural Policy becoming more rational.

Such developments in the EC are underway independent of the recent changes in Eastern Europe. They may, in aggregate, improve agricultural trade prospects for Eastern Europe slightly. But Eastern Europe of course wants to see more specific action, oriented directly to improving the conditions of its farming and food industry in general, and more specifically, of its agricultural trade with the EC. The Community has promptly begun to respond to such expectations, in a number of fields.⁶

⁶ For a summary record of such EC actions, see Möhler 1990 and Guth 1991. See also Commission of the European Community 1990.

As one of its first actions, the Community has quickly begun to develop a network of trade and cooperation agreements with individual East European countries. As far as trade is concerned, these agreements aim at improving access to EC markets for exports from East European countries, and attempts are being made to include agricultural products in these agreements. In particular, the Community has begun to eliminate quantitative restrictions on imports from East European countries; the restrictions had been maintained due to the countries' status of centrally planned economies.

Moreover, as a novel approach the EC has extended its Generalized System of Preferences (GSP, originally applying only to imports from developing countries) first to Poland and Hungary, and later also to Bulgaria, Czechoslovakia, and Romania. Tariff preferences under this regime include a number of agricultural products. In addition, in the case of some agricultural products to which the Community applies variable import levies, these levies are being reduced (usually by 50 percent). However, in these cases there are quotas for the maximum quantities of imports that can benefit from such levy reductions.

Though the trade preferences that the Community has extended to East European countries are improving the situation, they could and should be widened and deepened. In many cases preference margins are not yet very impressive. For example, for goose and duck liver (prepared or preserved), the duty has been reduced only from the MFN rate of 16 percent to the GSP rate of 11 percent. Moreover, quantitative limits on imports of products with variable levy reductions could be lifted or eliminated. Of particular interest to countries in Eastern Europe would be improved access to the EC market for high-value agricultural products and processed food. Such better market access could provide the urgently needed stimulus to develop and improve the food processing industry in Eastern Europe. It could also make a contribution to creating employment opportunities and earning foreign exchange.

These arrangements are in addition to bilateral agreements between the EC and East European countries. As a result of the 1989 Paris Economic Summit, the Community has taken the lead in the efforts to assist Eastern Europe on behalf of the Group of 24 (G-24, comprising the twenty-four member states of the OECD). This G-24 program of activities, coordinated by the EC includes, among other things, promotion of investment through the establishment of the European Bank for Reconstruction and Development, vocational training, improvement of environmental protection, better access to markets in Western countries, and technical and financial assistance for the development of agriculture.

Activities of the G-24 also include providing food aid to Eastern Europe. The apparent need to provide such food aid may seem to contradict the point made above that food consumption in Eastern Europe is already high (relative to the general standard of living) and may not, in general, grow very much as a result of the ongoing reforms. However, the apparent food gap in parts of Eastern Europe, with different dimensions and characteristics in different countries, may be a typical concomitant of the structural adjustments taking place in these countries. In particular, price reforms and subsidy cuts hit those parts of the population that do not, or do not yet, benefit from the economic recovery that will hopefully be achieved. (For some comments on the food situation in Poland, see Penn 1989.) The same experience has been made with structural adjustment programs in a number of developing countries. Well-designed food aid can, in such cases, be a rather helpful ingredient in the adjustment process (see Mellor 1988). Almost by definition, however, food aid in such cases has to be considered a transitory

need. Moreover, occasional shortages of individual types of food may gradually disappear with more market orientation in both food production and consumption. Finally, more careful analysis and planning, by both donor and recipient countries, should make sure that food aid does not lead to market depression in Eastern Europe (as was the case, for example, with cereals shipped as food aid to Poland in 1990; this turned out to aggravate an emerging surplus problem, especially since one of the aid conditions was that Poland could not export cereals in 1990).

A further stage (and a completely new phase) in cooperation was reached when the EC decided, at the Strasbourg EC summit of December 1989, that it was prepared to negotiate Association Agreements with East European countries, provided these countries made further and irreversible progress in their process of political and economic reform.⁷ These agreements ("Europe Agreements") will create a close partnership between the EC and the East European countries concerned, regarding trade, economic and technological cooperation, cultural exchange, political and institutional coordination, and financial support for Eastern Europe. According to the Commission of the EC, these Association agreements will establish the closest possible political and economic links, just below formal membership in the Community. First rounds of negotiations have already been held with Czechoslovakia, Hungary, and Poland, and an attempt is being made to conclude these negotiations by the end of 1991.

As far as trade is concerned, negotiations of Association agreements aim at establishing reciprocal free trade in manufactures, and they may make first steps towards finally allowing free movement of labor, services, and capital. The EC has already indicated that it will find it difficult to improve access to its markets for agricultural products and food, textiles, and steel—products in which Eastern Europe has the greatest export interest.

In summary, the EC has been quick in responding to the overwhelming political and economic changes in Eastern Europe. Until 1988, the Soviet Union and other CMEA countries essentially treated the EC as if it did not exist. Integration in Western Europe was considered a threat to political, military, and economic balance in Europe, and formal relationships with the EC were against the interests of the governments of the Soviet Union and other East European countries (see Hrbek 1990). One has to remember this history in order to appreciate fully how enormous the change is that has taken place in the last three years. In 1991 the EC is fully committed to developing close and lasting links with Eastern Europe, and it considers the task of doing so as important as the establishment of the single market and the creation of an economic and monetary union among its existing twelve member states.

On the other hand, it is distressing to note that in spite of all the political thrust for good partnership with Eastern Europe, the EC finds it difficult to override some of its narrow economic concerns in "sensitive" domestic sectors such as agriculture, steel, and textiles. The interest of East European countries in developing their large agricultural sectors and providing an adequate livelihood for the high proportion of their population still engaged in agriculture should be a decisive additional stimulus for the EC to reform its agricultural policies, in order

⁷ Commission of the European Community (1990). As conditions for such negotiations, the Commission has specified progress towards the establishment of: reign of law; human rights; multi-party systems; free and secret elections; economic liberalization towards a market economy system [author's translation from the German text].

to create better access to its agricultural markets and to eliminate unfair subsidized competition with East European farmers in their home markets and in third countries.

Unfortunately, there is relatively little that East European countries can do in order to stimulate such beneficial reforms in the EC. Their willingness to open their own markets to access by the EC would certainly help, but it does not provide much leverage. For some time it appeared that EC policymakers were prepared to risk the success of the whole Uruguay Round (and the much wider opening of many markets that it promises) in order to safeguard the interests of EC farmers. As long as that is the case, the opening up of markets in Eastern Europe is probably not enough of an incentive for EC negotiators to begin to give up protecting EC agricultural markets against competition from the East. The best Eastern Europe can do, at least for those Eastern European countries which are members of the GATT, is to support the stance taken by the U.S. and the Cairns Group that there will not be a successful overall outcome of the Uruguay Round if significant progress is not made in agriculture. The irony is that this advice poses a dilemma for the East European countries concerned. From their perspective, the best that could happen for them is that the EC maintains a high general level of agricultural protection, but provides preferential access to these highly protected markets for exports from Eastern Europe. On the other hand, this may be more difficult to negotiate than a multilateral (gradual) liberalization of agricultural trade in the GATT.

EXPERIENCES WITH GERMAN MARKET UNIFICATION

Unilateral trade preferences like those requested by East European countries (and in part granted by the EC) are only one step in the direction of trade liberalization. Borders of Western countries should be increasingly opened, in particular for agricultural products. But true trade liberalization requires that the countries receiving trade preferences open their borders too. The EC Commission has suggested that this should happen in Eastern Europe, and that the aim should be for East European countries to bring their system in accordance with the multilateral trading system and expose their economies to international competition (Commission of the EC 1990). This has already happened in part, and further steps in this direction are planned in some East European countries. The end result of such a process would be full market integration of Eastern Europe.

A unique experiment in market integration is currently taking place in Germany. The process of German unification, so long awaited but essentially considered an unrealizable dream by the German people on both sides of the border, is unique in all regards. Of course it is infinitely more than just an economic exercise, even though its economic implications right now attract undue attention in both parts of Germany. It has been made possible by the political changes in Eastern Europe, in particular by Gorbachev's perestroika and by the decision of the Hungarian Government, in September 1989, to open its borders to refugees from East Germany. It will have many repercussions on developments in other parts of Central and Eastern Europe. However, both the fundamental nature and the many details of the process of German unification will remain unique. It is therefore difficult, if not impossible, to draw any more general conclusions from what is happening in Germany.

Some of Germany's current experiences may be of interest, if only as a starting point for thinking about what is different, in the German case, from the situation elsewhere. This paper

offers only a few observations, in particular on some of the implications of opening up agricultural markets. After all, countries in Eastern Europe want to see the markets of the EC (and of other Western countries) opened up for their exports. As argued in the previous section, the resulting market integration is generally considered an important vehicle of economic growth.

The integration of the German market is a traumatic experience for many people in East Germany, not the least for those in the East German agricultural and food industry. In part this is due to the rash and in some regards disorganized way in which this integration has occurred, a result of the political thrust for unification in both parts of Germany, which has forced an unbelievable speed of developments. To a large extent the traumatic implications of this rapid market integration also reveal more fundamental economic problems.

With sudden exposure to agricultural market conditions in West Germany and the EC, the large collectivized farms in East Germany have recognized how difficult it is for them to compete with farms on the other side of what used to be the German border. West German agriculture, with its small-scale structure, is usually considered inefficient by international standards.⁸

Producer prices in the EC (and hence in West Germany) are certainly not low by international standards. For many products they are two or more times higher than world market prices (graph 5-9). However, producer prices in the GDR have been much higher still (at the exchange rate of one West German mark for one East German mark for salaries and wages that was used when monetary union was established on July 1, 1990). For most crops, producer prices have been nearly twice as high as prices in West Germany, for most livestock products they have been triple the West German producer price level. Prices for some farm inputs in the GDR have also been above the level in the Federal Republic (graph 5-10). However, it appears that the effective (price) protection of agriculture in the GDR has been considerably above that in West Germany and the EC.

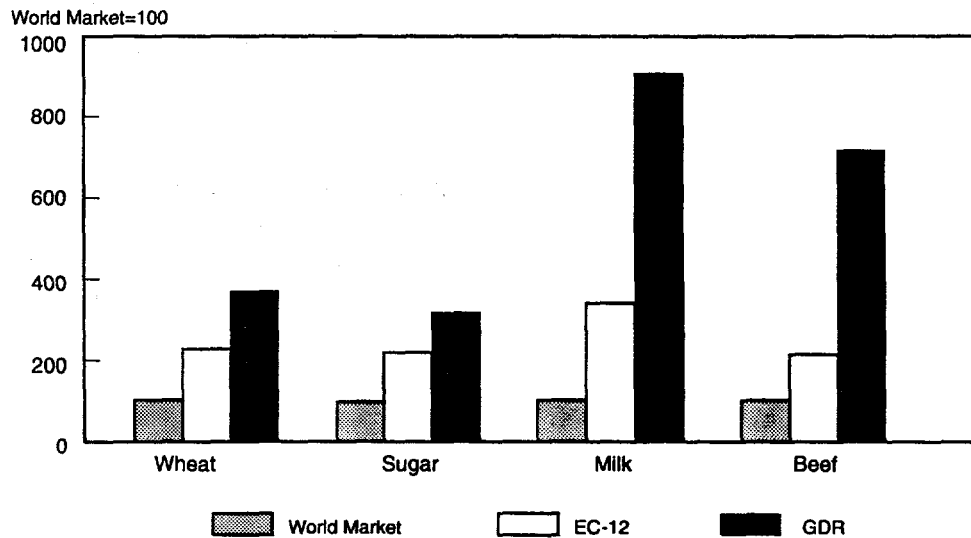
Consumer prices for food in East Germany, on the other hand, have been kept significantly below their producer price equivalent through subsidies that placed a heavy burden on the public budget. For example, while the producer price for milk in East Germany was more than double that in West Germany, the retail price for milk was only half the West German price.

As a result of sudden exposure to the EC price structure, East German agriculture is now in major trouble. It is difficult to provide any quantitative evidence. However, experts from East Germany reckon that three quarters or more of the farms in East Germany are now making significant losses. The difficulties that agriculture in East Germany now faces as a result of its integration into the (highly protected) EC market reveal the lack of its competitiveness. They manifest all the inefficiencies created by collectivization and central planning.

The food processing and marketing industry in East Germany is in even more trouble. In many of its sectors, locations are inappropriate, physical infrastructure and machinery are obsolete, technologies are backward, the capital base is insufficient, marketing strategies are underdeveloped, consumer orientation is lacking, and product quality is far below Western

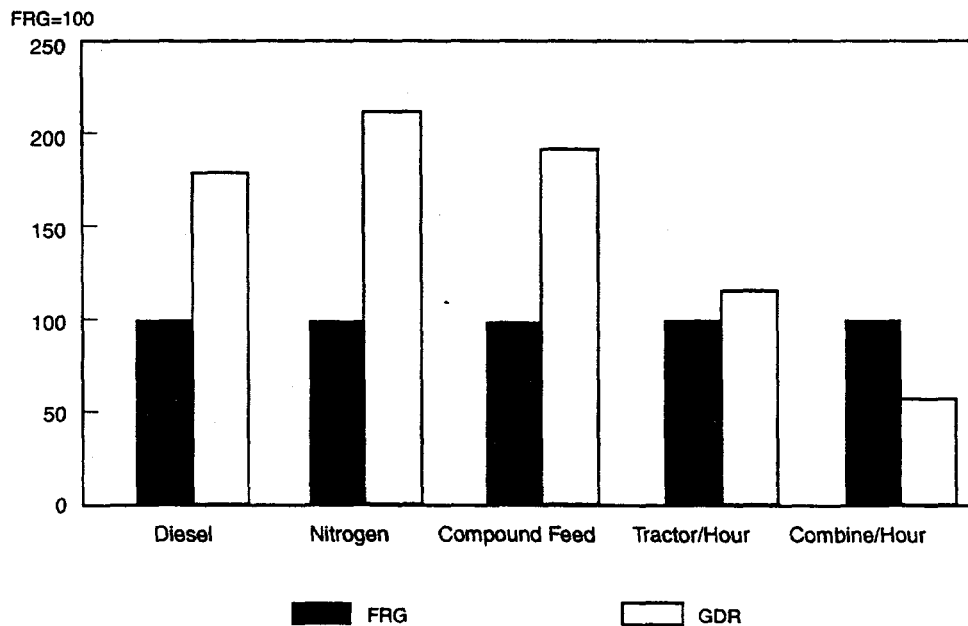
⁸ If fully exposed to the pressures of international markets, East German agriculture would appear at even greater disadvantage.

Graph 5-9. Agricultural Prices: World Market, EC, GDR 1986-88



Source: OECD 1989.

Graph 5-10. Input Prices in the FRG and The GDR, 1988



Source: *Statistisches Jahrbuch der DDR; Statistisches Jahrbuch über Ernährung, Landwirtschaft und Forsten der Bundesrepublik Deutschland; Ministry of Agriculture of the GDR.*

standards. As a result, as soon as borders were opened, the East German market was flooded with food from the West. East German consumers' strong preference for previously unavailable Western products (even when their prices, in East German marks, were considerably above prices of East German foods before July 1, 1990) has further added to the problems of the food processing and marketing industry.

It is certainly difficult to draw any general lessons from the very specific case of German market unification. However, experiences suggest that the agricultural and food industry in some East European countries will have to undergo very significant adjustments before it can successfully compete with that in Western countries. There is certainly ample scope for such adjustment, and the competitive position of the agricultural and food industry in Eastern Europe can be significantly improved as a result of economic reforms and market liberalization in Eastern Europe. However, before this is achieved, Eastern Europe will probably have much more interest in seeing Western markets opened than it has in opening up its own markets to international competition, though this differs greatly among countries in Eastern Europe. For example, except for relatively low tariffs, Poland's agricultural and food markets are wide open to international competition.

The policy conclusion to be drawn can certainly *not* be that Western countries should not open up their markets to agricultural and food exports from Eastern Europe. On the contrary, Western countries should provide Eastern Europe with all possible options, and they should not protect their farmers and food processors from international competition. However, governments in Eastern Europe may want to consider carefully what the comparative advantages of their agricultural and food industries are, and to what extent it makes sense to stimulate agricultural exports before competitiveness has been improved. Exports from sectors that lack international competitiveness are an expensive way of earning foreign exchange.

One other lesson, which can possibly be learned from the German experience, relates to the importance of choosing the appropriate rate of exchange. The exchange rate adopted for converting East German salaries and wages into West German marks on July 1, 1990, i.e. one to one, was chosen for political and social reasons. For such reasons it may not have been possible to set a different rate. However, this rate has made competition even more difficult for the East German economy. With a lower rate of exchange, the East German economy, including the agricultural and food industry, would have had slightly more breathing room for adjustments.

One practical indicator of the appropriate rate of exchange is the call of different industries for subsidies. If most industries call for subsidies because they do not feel internationally competitive, the exchange rate is probably overvalued. It is sometimes argued that during the adjustment period the agricultural and food industry in Eastern Europe needs subsidies in order to improve its international competitiveness. This may well be true. However, the case would have to be carefully established that adjustments in the agricultural and food industry are more difficult than, but equally promising as those in other sectors, before such subsidization can be justified.

CONCLUSIONS

The ongoing political and economic reforms in Eastern Europe will significantly change the environment of and the situation in the food and agricultural industries of the countries

concerned. They are also likely to affect agricultural trade with Western Europe. In the medium to long run, the production potential of agriculture in Eastern Europe is likely to grow more than domestic consumer demand for basic food crops and meat. Agriculture in Western Europe can therefore probably not expect that the reforms in Eastern Europe will create expanding demand for its exports. On the contrary, the East European market for exports from Western countries may shrink, and there may be more competition from Eastern Europe in agricultural markets in other parts of the world. Moreover, East European countries want better access to agricultural and food markets in Western Europe.

Developments in Eastern Europe, therefore, reinforce the need to adjust agricultural support and protection policies in Western Europe. From this perspective it is even more important that significant progress is made in the Uruguay Round negotiations on agriculture, and that negotiators from Western Europe and particularly the EC make a constructive contribution to the successful outcome of this GATT round.

In addition to such a general move towards liberalizing world-wide agricultural trade, Western Europe can and should open its borders to agricultural and food exports from Eastern Europe. The EC has made first steps in this direction by extending its Generalized System of Preferences for developing countries to countries in Eastern Europe. However, trade preferences for Eastern Europe can be further improved by lowering remaining tariffs and levies, and by eliminating quantitative limits to levy-reduced imports. This is exactly what should happen in the EC under the Association Agreements currently negotiated with some East European countries. Moreover, as East European countries seek expanding markets for their agricultural exports to other parts of the world, the EC should make sure that its export subsidies do not interfere with these efforts.

Before the changes in Eastern Europe's agricultural trade can fully materialize, the agricultural and food industry in Eastern Europe will have to undergo significant adjustment to improve its international competitiveness. Experience with market unification in Germany may suggest that the nature and extent of this adjustment has to be immense. Before adjustment occurs, it will be difficult for governments of East European countries to assess the comparative advantage of their agricultural and food industries, and hence the extent to which it is economically worthwhile to stimulate exports from these industries.

This is, however, no reason for governments in Western countries not to create the market potential that Eastern Europe may seek on world food markets. It would be ironic if at a time when the world greets the rise of the market system in Eastern Europe, Western Europe veers from market orientation in its agricultural and food industry.

REFERENCES

- Alexandratos, N., ed. 1988. *World Agriculture: Toward 2000*. FAO: Rome and London.
- EC Commission (Commission of the European Community). 1990. "Development of Community Relations with the Countries of Central and Eastern Europe." (in German). *Agra-Europe 20* (German edition, special supplement).

Dietze, C. von. 1992. "Getreidehandel (Statistik des Getreidehandels in neuerer Zeit)." *Handwörterbuch der Staatswissenschaften Ergänzungsband* (supplemental volume), pp. 320–334.

EUROSTAT (Statistical Office of the European Community). Various volumes. *External Trade Monthly Statistics*. Luxembourg.

_____. 1988. *External Trade Analytical Tables—Nimexe 1987*. Luxembourg.

FAO. Annual volumes. *Trade Yearbook*. Rome.

_____. 1988. *European Agriculture: Policy Issues and Options to 2000*. Document No. ERC/88/INF/4. Rome.

_____. 1989. *Commodity Review and Outlook 1988-89*. Rome.

_____. 1990. *Policy Changes Affecting European Agriculture*. Document No. ERC/90/INF/4. Rome.

Field Mission to Poland ("Borlaug Mission"). 1989. *An Assessment of Polish Agriculture and the Food Economy*. Warsaw: Foundation for the Development of Polish Agriculture.

GATT. 1990. *International Trade 1988–89*. Geneva.

Germany, Federal Statistical Office (Statistisches Bundesamt). Fachserie 6, Reihe 6.

Guth, E. 1991. "The Outlook for Eastern Europe." Paper presented at the Agra-Europe Tenth Annual European Agricultural Outlook Conference, February 27–28, London.

Hrbek, R. 1990. "Die EG und die Veränderungen in Mittel- und Osteuropa." *Wirtschaftsdienst* 70(5), pp. 247–255.

Mellor, J. W. 1988. "Food Policy, Food Aid and Structural Adjustment Programs." *Food Policy* 13(1), pp. 10–17.

Möhler, R. 1990. "The Commission: Community Agreements and the Paris Summit Mandate." Paper presented at the Business Policy Seminar "Agribusiness and the Opening-Up of Cooperation with Eastern Europe" of the Center for European Policy Studies, February 20, Brussels.

OECD. 1989. *PSE and CSE Tables 1979–1988*. Paris.

Penn, J. B. 1989. "Poland's Agriculture: It Could Make the Critical Difference." *Choices* Fourth Quarter, pp. 3–7.

Schmidt, S. C. 1989. *Planned Food Imports: Are European CPE's Reliable Customers?* AEI Occasional Papers. Washington, D.C.: American Enterprise Institute for Public Policy Research.

Statistisches Jahrbuch der DDR. 1989. Berlin: Staatsverlag der Deutsche Demokratischen Republic.

Statistisches Jahrbuch über Ernährung, Landwirtschaft und Forsten der Bundesrepublik Deutschland. Various volumes. Bonn: Münster-Hiltrup.

Stern, R. M. 1960. "A Century of Food Exports." *Kyklos* 13(1), pp. 44-64.

Tangermann, S. 1990. "European Agriculture in the 1990s: European Integration and the Common Agricultural Policy." Paper prepared for the conference on "The United States and Europe in the 1990s," American Enterprise Institute, March 5-8, Washington, D.C.

Tangermann, S. 1989. "Evaluation of the Current CAP Reform Package." *The World Economy* 12(2), pp. 175-188.

UN Economic Commission for Europe and FAO. 1989. *Agricultural Review for Europe.* No. 31 (1987 and 1988) Vol. II (Agricultural Trade). New York.

THE CENTRAL AND EASTERN EUROPEAN AND SOVIET INTRA-REGIONAL AGRICULTURAL MARKET

*Andras Inotai**

The Central and Eastern European members of the former CMEA (Poland, Czechoslovakia, Hungary, Romania, Bulgaria, and the former German Democratic Republic) are small countries in world agricultural markets, and changes in their imports or exports have little effect on international prices or trade flows. Although their trade is, in aggregate, small on world markets, it is important in the domestic economies of each of the countries. They were bordered by two of the superpowers of world agricultural trade: the USSR in the east, and the European Community in the west. The growth of import demand in the USSR and increasing protectionism in the European Community reshaped Central and Eastern European agricultural trade in the 1970s and 1980s.

Two trends dominated Central and Eastern European agricultural trade in the past two decades. Subsidized food consumption, particularly of livestock products, increased demand for imported feed, and reduced exports of food. Barriers to entry into Western European markets and the remarkable rise in Soviet import demand redirected Central and Eastern European exports of food to the USSR. The demise of the CMEA and radical decline of the Soviet market has consequently hit these countries hard, compounding the economic difficulties of the agricultural transition.

Intra-regional trade in agriculture has been shaped less than, for example, trade in industrial goods, by explicit CMEA agreements on specialization in production and on directed trade. National policies on food production were not subject to intra-regional negotiation. The CMEA defined its first long-term agricultural strategy in 1978, in response to rising imports from outside the region, and reaffirmed its main priority of regional self-sufficiency in 1984. A Permanent Commission on Agriculture was convened and a framework for intra-regional trade established, including bilateral quotas, clearing prices based on five year moving average of world market prices, and accounting in the transferable ruble. This framework represented minimal intervention in domestic agricultural policies, and it was moreover not always followed. Membership in CMEA nonetheless distorted patterns of agricultural production and trade, and the necessary adjustment during transition to more market-based agriculture is substantial.

This paper addresses agricultural trade between and among Central and Eastern European countries and the USSR. It is divided into four sections. The first places regional production and trade in an international context. The second identifies developments that have influenced intra-

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regional trade in the 1980s. These derive both from domestic policy and from increased international agricultural protectionism. The third traces the impact of changed rules of trade, particularly the switch to hard currency payment, on intra-regional agricultural trade. The final section looks forward and outward to world markets to emphasize the importance of global trade liberalization for Central and Eastern European agriculture.

REGIONAL PRODUCTION AND TRADE IN AN INTERNATIONAL CONTEXT

The former Soviet Union was the third largest agricultural producer in the world. The Central and Eastern European countries are small producers, but agricultural production per capita is nonetheless higher than the world average. Excluding the former USSR, the region's share of global production of specific commodities (for example, potatoes, barley, milk, apples, sunflowers, and meat and poultry specialties) is significant.

Agricultural exports from the region are a small share of world trade, with the exception of certain specialty products, such as goose liver, poultry, some fruits and spices, and sunflower oil. Throughout the 1980s exports have tended to increase and imports to decrease in both current and constant dollars, as illustrated in table 6-1.

The size of the agricultural sector and participation in trade differ considerably among countries of the region. Agriculture comprises a higher share of GDP (between 15 and 20 percent) in Bulgaria, Hungary, and Poland, and less than 10 percent of GDP in Czechoslovakia and the former GDR. Agricultural exports are relatively important for Bulgaria, Hungary, and Poland (tables 6-1 and 6-2). Agricultural imports are important in Poland and Czechoslovakia, as well as in the former USSR, and the GDR was formerly a major importer within the region.¹ The traditional trading behavior of countries within the region was thus diverse, and included net importers (Czechoslovakia, the GDR, Poland, and the USSR) and net exporters (Bulgaria, Hungary, Romania). Even without the USSR, the six smaller Central and Eastern European countries together were net importers prior to the recent reforms.

Increased reliance on grain, feed, and tropical imports purchased with hard currency raised pressures to export to hard currency markets. Despite barriers to entry in the important Western European market, the CMEA countries were more successful in selling agricultural products to OECD countries than they were in selling other products. The share of agriculture in exports of the Central and Eastern European countries to OECD countries was higher than the share of agriculture in total exports, due to the difficulty in selling low-quality CMEA manufactures on hard currency markets. Higher quality agricultural products, particularly meat specialties, dairy products, frozen fruits and vegetables, and vegetable oils competed well when they were allowed entry, and the lower quality processed meats, fresh and canned fruits and vegetables, wheat, beverages, and tobacco were sold in intra-regional trade.

¹ The position of the GDR was unusual because its exports had almost free access to the agricultural market of the Federal Republic, while East German producers were largely protected from West European competition.

THE INCREASING DOMINANCE OF THE CMEA AND SOVIET MARKETS

Before World War II, agricultural trade between and among Central and Eastern European countries, including the USSR, was insignificant because all countries of the region were substantial exporters of wheat, barley, sugar, vegetables, fruits, live animals, and meats. Three developments changed this trade pattern in the post-war period. Income growth and the peculiar structure of consumption that accompanied central planning increased domestic demand for food, particularly for items with high income elasticities, such as livestock products. Trade barriers of the Common Agricultural Policy of the European Community had an impact in the early 1970s. The increased difficulty in selling agricultural exports outside the region reduced the opportunity cost of subsidizing growth in domestic consumption, a policy of high priority in its own right. On the import side, tropical products and feed came increasingly from the developing world, and the share of both exports and imports coming from developed market economies fell. The smaller Central and Eastern European countries increasingly sold to each other, but each sold even more to the Soviet Union.

Table 6-1. Agricultural Trade of European CMEA Countries, Selected Years
(millions of U.S. dollars)

Country	1983	1985	1987	1989	1989 (1983=100)
<i>Exports</i>					
Bulgaria	1,764	1,546	1,639	1,695	96.1
Czechoslovakia	550	574	647	675	122.7
GDR	416	543	655	690	165.9
Hungary	2,041	1,847	1,907	2,172	106.4
Poland	789	954	1,193	1,529	193.8
Romania	840	770	872	626	74.5
USSR	2,367	2,211	2,882	2,897	122.4
Total	8,767	8,445	9,795	10,284	117.3
<i>Imports</i>					
Bulgaria	820	1,073	1,014	1,207	147.2
Czechoslovakia	1,657	1,744	1,933	1,861	112.3
GDR	2,665	1,945	1,960	2,205	82.7
Hungary	796	731	895	728	91.5
Poland	1,348	1,375	1,392	2,099	155.7
Romania	757	608	725	523	80.2
USSR	18,732	18,093	16,499	20,257	108.1
Total	27,775	25,569	24,231	28,964	108.2

Note: Due to substantial exchange rate distortions in the intra-CMEA trade of Bulgaria, the GDR, Romania, and the USSR over the entire period, and of Czechoslovakia until 1988, international comparisons may lead to unfounded conclusions. Figures referring to the same country are more consistent.

Source: FAO 1989 and 1990.

Table 6-2. Agriculture's Share of European CMEA Countries' Total Imports and Exports and Trade with OECD Countries, Selected Years
(percent)

Country	<i>Total Imports and Exports</i>				<i>Trade with OECD Countries</i>		
	1980	1985	1987	1989	1980	1985	1987
<i>Exports</i>							
Bulgaria	14.5 ^a	11.6	10.1	10.8	20.0	21.8	25.4
Czechoslovakia	5.3	3.3	2.8	4.7	5.9	7.4	8.1
GDR	1.7 ^a	1.7	1.9	2.1	4.9 ^b	3.1 ^b	3.7 ^b
Hungary	22.1	21.8	19.9	22.7	25.3	26.0	24.6
Poland	6.2	8.3	9.8	11.6	14.9	19.4	22.2
Romania	8.3 ^a	6.9	6.1	4.3	7.1	3.8	5.2
Soviet Union	1.8	2.6	2.7	2.7	1.1	1.6	2.0
<i>Imports</i>							
Bulgaria	6.7 ^a	7.9	6.1	8.3	13.2	12.3	6.8
Czechoslovakia	10.4	9.9	8.3	13.0	14.6	7.6	6.1
GDR	12.1 ^a	7.7	6.0	7.0	30.4 ^b	21.3 ^b	3.5 ^b
Hungary	8.3	8.9	9.1	8.3	5.7	4.4	4.0
Poland	13.7	12.7	12.8	20.8	27.0	16.1	12.9
Romania	10.0 ^a	7.0	4.8	4.3	17.9	7.4	12.8
Soviet Union	23.8	22.0	17.2	17.7	24.2	24.8	14.1

a. 1983.

b. Excluding trade with the Federal Republic of Germany.

Source: Author's calculations from FAO 1989 and 1990. OECD 1987 and 1989.

Governments in each of the CMEA countries sought national self-sufficiency in food; if they could not achieve it, they turned first to regional sources for imports. The mechanization of both agriculture and industry generated demand for energy. Subsidized consumption of livestock products shifted the balance of primary production toward the livestock sector, and increased demand for imported feed. Although energy could be imported from the USSR, feed supply to the region was inadequate for the simultaneous stimulation of livestock production in all countries. Central and Eastern European countries increasingly imported expensive feed grains and protein meals and fed them to an inefficient livestock sector to meet growing domestic and Soviet demand for meat.

The economic cost of this strategy was masked by subsidies, but the necessary intervention increased as prices of final products fell on world markets relative to input costs, and artificial exchange rates moved against exporters. In Poland and Hungary, for example, the cross exchange rate between the national currency, the dollar, and the ruble significantly differed from the official CMEA exchange rate between the dollar and the transferable ruble. International prices for agricultural goods calculated in highly undervalued dollars and overvalued transferable rubles meant extremely low ruble prices and export incomes for exporting countries, even when the exports embodied a significant expenditure of hard currency.

In Poland, agricultural exports of 37.9 billion² zlotys to the CMEA in 1985 had to be supported by 21 billion zlotys. In Hungary, some export products required subsidies three times the CMEA export prices. Moreover, exports of the most highly subsidized products, such as poultry and pork, grew most.

In the 1980s, higher oil prices led to substantial gains in terms of trade for the USSR. Hungary, and to a lesser extent Bulgaria and Romania, began to export a higher volume and value of agricultural products to pay for oil imports. The increased earnings from energy exports financed growth in Soviet food imports, and Central and Eastern European suppliers were attractive for geographic and political reasons. The USSR was willing to pay in hard currency for imports of some meat and grain that substituted for imports from outside the region. Hungary was particularly successful in selling food to the USSR for hard currency. Hungary and Romania sold meat and grain to the USSR in barter agreements for oil and natural gas. The agreements called for bilaterally balanced trade denominated in U.S. dollars, but Hungary did not make full use of its import quota, and earned convertible currency balances of \$300-\$500 million³ annually.

At the same time that the USSR was pulling agricultural products into its market, trade barriers increasingly pushed Central and Eastern European food out of markets in the rest of the world. The exports produced by the Common Agricultural Policy reduced opportunities to sell in Western Europe, and also increased competition in third markets, such as the Middle East and North Africa. The American withdrawal of most-favored-nation status for Poland reduced American imports of Polish food, particularly ham.

Shrinking markets for Central and Eastern European food outside the region reduced the power of exporters, even in intra-regional trade. World energy markets were characterized by excess demand, while agricultural markets had pervasive excess supply. Regional exporters were increasingly asked to accept "soft" goods in exchange for food, and efforts to solicit regional investment in capital intensive agriculture, parallel to regional development of Soviet energy sources, were rebuffed. Without these investments, particularly in high quality food processing, exporters were largely locked into trading relations in which they had little bargaining power. Despite these limitations, intra-regional trade provided predictable prices and a ready outlet for increasing production.

The growth of the Soviet market peaked in the mid-1980s, and after 1986 Central and Eastern European food exporters sought again to increase sales to developed market economies. After 1986 the Soviets cut back on hard currency agricultural imports from partners in Central and Eastern Europe by insisting on bilateral balancing, and the attractiveness of the USSR as a trading partner began to fade. Bilateral balancing agreements were better than no agreements at all, since they usually involved "hard" goods on each side, but the possibility of earning free convertible currency balances from sales to the USSR diminished. Few commodities were sold in both intra-regional and extra-regional markets. Hungary offered products in both markets, but specialization nonetheless prevailed. Beverages moved almost exclusively in intra-regional trade, and grain exports went largely to importers within the region. Live animals were exported from

² A billion is 1,000 million.

³ Unless stated otherwise, all dollar amounts are current U.S. dollars.

the region, bypassing the quality degradation that characterized much of the regional meat processing industry. Higher quality processed fruits, vegetables, meats, and dairy products moved out of the region, while the lower quality fresh and canned produce, meat, and dairy products stayed within.

The patterns of commodity specialization resulted largely from the greater selectivity of consumers in market economies, but income differences also had an impact. The commodity specialization now makes it difficult to redirect trade from regional markets, where demand is currently depressed. The products no longer easily sold in Central and Eastern Europe or in the USSR are not well known in other markets, and in general their quality is low. The difficulties of finding new markets for Central and Eastern European manufactured products also characterize agricultural trade, except in raw bulk commodities.

The emphasis on import substitution in the past limits the extent to which further reduction in imports can compensate for currently depressed export markets. While imports of some commodities such as feedgrain and tropical products were substantial (even into the smaller Central and Eastern European countries), the products imported were for the most part those that cannot be economically produced in the region. Feedgrain is a possible exception, but the demand for feedgrain should fall considerably with both reduced consumption internally and lower exports of meat, and with higher efficiency of feeding at the level of primary production. Increased production of high-protein oilseed meal, such as soy, will require a significant investment in breeding and processing, and will take time, but shows potential.

Among themselves, the smaller Central and Eastern European countries traded more agricultural inputs and food processing equipment than agricultural products. In the late 1980s, imports of equipment from outside the region increased as the backwardness of regional food processing technology became more apparent.

HARD CURRENCY TRADE AND THE DEMISE OF THE CMEA

Most bilateral trade between members of the former CMEA has been conducted at world market prices and in convertible currency since January 1991. The formal CMEA trading conventions were replaced by what was expected to be loose coordination and exchange of information to support commercial trade. The long-sought liberation from the transferable ruble was expected to bring greater efficiency, competitiveness, transparency, and relief from subsidies.

Developments in 1991 starkly defied these expectations. Agricultural trade within the former CMEA has not become more efficient and remunerative; it has collapsed. Trade links developed over decades disintegrated almost overnight, for a number of complex reasons. The loss of intra-regional trade, particularly the Soviet market, has hit the traditional exporters (Hungary, Romania, and Bulgaria) hard, at a time when domestic demand is also contracting.

Soviet sales of energy to Central and Eastern Europe exceed in value Soviet purchases of Central and Eastern European food by a large margin (table 6-3). Even in Bulgaria, where exports of agricultural products are largest relative to imports of fuel, Soviet purchases of food and fiber in 1989 were only 38 percent of earnings from the sale of fuel. Since the prices of

Table 6-3. USSR-European CMEA Trade in Agricultural Goods and Mineral Fuels, 1989
(millions of rubles)

Item	Bulgaria	Czechoslovakia	Hungary	Poland	Romania
<i>Soviet Exports</i>					
Hard coal	248.6	121.3	52.2	56.3	42.3
Coke	—	—	49.0	—	—
Crude oil	1,250.2	1,890.9	717.8	1,472.4	441.9
Refined oil products	132.1	42.9	213.4	296.4	1.7
Natural gas	574.7	1,003.0	504.1	672.7	625.5
Electricity	145.1	164.5	351.9	121.7	178.3
<i>Soviet Imports</i>					
Cereals	—	0.9	124.7	—	—
Meat and meat products	70.2	—	192.6	—	49.5
Fish	—	—	1.1	—	—
Dairy products					
eggs	12.9	—	7.5	0.7	—
Fresh vegetables	25.2	—	—	6.0	5.3
Preserved vegetables	69.7	—	111.8	—	8.1
Fresh fruits	18.2	—	65.0	8.8	7.9
Preserved fruits	92.0	—	13.1	1.5	2.8
Sugar and pastry	—	7.2	7.7	—	—
Beverages	113.9	15.6	79.9	6.7	—
Tobacco and cigarettes	498.1	—	—	—	—
TOTAL	900.2	23.7	620.6	23.7	73.6
Net imports	894.5	5.3	598.3	-35.4	69.7
Share of agricultural imports in exports of mineral fuel (net)	38.1	*	31.7	*	5.4

— Not available

a. Soviet surplus in exports of mineral fuels and agricultural goods.

Source: *Vneshnye ekonomicheskie sviazi SSSR v 1989 g.*

fuel have risen more than those of agricultural products⁴ with the switch to the new price structure, Soviet earnings were more than adequate to pay for continued imports of Central and Eastern European food. Yet in the first half of 1991, immediately following the introduction of hard currency trading, agricultural trade between Central and Eastern Europe and the USSR collapsed.

What are the reasons for this unexpected development? Since the USSR still had an unreformed centrally planned economy in January 1991, hard currency was still allocated administratively, except for the small volume sold at auction. The allocation of foreign exchange at the Union level thus reflected administrative priorities, and these were in part expressed in the bilateral indicative shopping lists that replaced former agreements. Agricultural goods were not included in the lists, and the likelihood that a prospective importer would be given foreign exchange to purchase them was thus low.

One can only speculate about why agricultural goods were excluded from the lists, but the complex economics and politics of the retarded Soviet reform suggest several. Even though retail food prices were increased in April 1991, food was throughout 1991 subsidized in the USSR, and imported food carried the highest subsidy. The exclusion of agricultural products from the indicative lists of country-to-country trade signalled that the Union budget would no longer subsidize food imported from Central and Eastern Europe. Republic governments could have stepped in with indicative lists of their own, but apparently did not. Individual firms have the freedom to import food or agricultural products, but have no incentive to pay high auction rates for hard currency and sell imported food at controlled low ruble prices. The breakdown in trade thus appears to be a problem of finance and administration, but at its heart is linked, as are most problems of Soviet agriculture, with the failure to liberalize prices.

Central and Eastern European food at liberalized prices in hard currency is more expensive than Soviet domestic food, and without a large subsidy it cannot be sold. Moreover, alternative suppliers can offer attractive financing and price competition. Concessional financing offered by the United States and the European Community reduces the competitiveness of Central and Eastern European suppliers, who cannot offer credit on concessional terms, or sometimes at all. The eastern part of Germany, a customer for Central and Eastern European agricultural exporters when it was the GDR, became a formidable competitor after the monetary union, when Germany financed one billion deutsche marks in sales of East German food to the USSR.

The dramatic drop in agricultural trade between the Soviet Union and Central and Eastern Europe in 1991 is a result of the continued decline of the Soviet economy and the postponement of reform. When the ruble becomes fully convertible, when Soviet prices are

⁴ It is clear that Central and Eastern European oil importers paid less for Soviet oil than they would have paid alternative suppliers. Whether the USSR paid more or less than world market prices for agricultural products is difficult to determine. In 1989, unit prices for oil were 33 percent higher on the world market than in CMEA, while fresh vegetables, fresh fruit, tobacco, and cigarettes could be purchased from alternative sources at 28–43 per cent of CMEA prices. With a more precise definition of the composite commodity "vegetables and fruit," however, it is not clear that the Soviets paid more than world market prices. According to Hungarian statistics, in 1988 Hungary would have paid Ft 23.9 billion more for Soviet oil at world market prices, but would have earned Ft 34.9 billion more for agricultural sales to the USSR at world market prices. Retrospective accounting is very complex, and evidently a poor indicator of current and future trading patterns.

liberalized, and when the economic decline is halted, agricultural trade can be expected to resume more normal levels. The most important determinant of long-term trade will be the level of demand for food in the populous and developed parts of the European USSR. These are the regions in which consumption of meat and dairy products is currently most highly subsidized, and as subsidies decline, demand can be expected to fall considerably.

In the short run, traditional exporters cannot hope for much relief from within the region. The GDR is gone. Price liberalization has raised the relative price of food in the other importing countries, Czechoslovakia and Poland, and demand has fallen. Traditional exporters, and now importers also, find excess supplies of some commodities. For example, in early 1991 Poland offered one million tons of grain and 100,000 tons of meat to the USSR. Regional exporters find some of their traditionally protected markets challenged as currencies become convertible and trade regimes liberalize.

REGIONAL TRADE AND THE INTERNATIONAL ENVIRONMENT

According to recent estimates, the total cost of agricultural support in the OECD's twenty-four member countries climbed to \$300 billion, about 44 percent of the value of total crops and livestock produced in those countries in 1990. Net producer subsidy equivalents alone reached \$176 billion, slightly less than the combined GDP of Bulgaria, Czechoslovakia, Hungary, Romania, and Poland. Central and Eastern European countries cannot afford subsidies on this scale, and their producers will be less protected from developments on markets, both domestic and foreign.

Weakened domestic markets create additional pressures to export. The domestic capacity to physically store commodities and to finance storage is weak, and excess supply can have a strong impact on producer incomes and employment. Improved access to the European Community has helped Hungary and Poland cushion the decline in sales to the USSR (see Tangermann, this volume). Czechoslovakia, Hungary, and Poland expect to formalize a special relationship with the European Community as associate members in early 1992. Associate membership benefits those who get it, but it is a selective and fragile instrument on which to base sectoral development. The disruption of trade with the USSR in 1991 demonstrates the risk inherent in economic strategy based on special political links and economic privilege. Multilateral trade liberalization within the framework of the GATT would offer a sounder and less selective basis for increased market access for Central and Eastern European agricultural products. According to OECD estimates, the removal of agricultural subsidies and trade barriers would bring total gains of more than \$200 billion annually. Prices for internationally traded agricultural products would rise by 12 percent. Since potential net exports of Central and Eastern European food have increased with the agricultural transition, the increase in the price level would benefit agriculture throughout the region.

An increase in world prices and enhanced opportunities to trade would hasten institutional reform within the agricultural sectors, and increase investment. At present the pace of reform and flow of investment is inhibited by depressed domestic demand and uncertainty about foreign markets.

The GATT negotiations on agricultural trade could yield several important gains for Central and Eastern European agriculture even if they do not bring full liberalization of

agricultural trade. A negotiated reduction in export subsidies would improve the competitiveness of Central and Eastern European exports to North Africa and the Middle East. The combination of better (if not free) access to EC markets (through associated membership) plus reduced competition in third markets would improve the prospects for agricultural trade. In addition, if commodity assistance is offered to the USSR in support of the economic reform program, part or all of the food should come from the exportable surpluses of Central and Eastern Europe, a traditional supplier for the Soviet market. Assistance would be most useful to both parties if concessional food shipments flow through commercial channels, and hence begin to rebuild commercial links.

CONCLUSION

The transition has brought profound changes in patterns of intra-regional trade in agriculture among the former members of the CMEA. The extent of the change illustrates the degree to which agricultural trade was distorted, even though the explicit apparatus of regulation was less visible in agricultural trade than in other sectors. The end of subsidized consumption of livestock products throughout the region severed trade flows linked with it. The unexpected loss of the Soviet market for agricultural goods can be mitigated to a very modest extent by the improved access of Poland, Czechoslovakia, and Hungary to the European Community; Romania and Bulgaria have not been so favored.

Major determinants of future trade flows are not yet known. North-South trade within the region utilizing the comparative advantage squandered in the past will increase, but will depend on the strength and timing of recovery of domestic demand in each of the countries. The course of reform in the USSR is unclear, and the alternatives do not carry obvious implications for regional agricultural trade, since the impact of reforms on Soviet domestic demand for and supply of food is still highly conjectural. Nor is it known to what extent participants in the GATT negotiations on agriculture are willing and able to accommodate the Central and Eastern European desire to participate in a liberal agricultural trading regime. The agricultural transition has thus taken the region from a regime in which agricultural trade was important and relatively predictable to one in which it is even more important but highly uncertain.

REFERENCES

FAO. Annual volumes. *Trade Yearbook*. Rome.

OECD. Annual volumes. *Foreign Trade by Commodities*. Series C. Paris.

Vneshnye ekonomicheskie sviazi SSSR 1989. 1990. Moscow: Ministerstvo Vneshnikh Ekonomicheskikh Sviazei SSSR.

Part III
The Policy Framework:
Ownership, Pricing, and Finance

PROPERTY RIGHTS IN LAND

*Karen M. Brooks**

Property rights define sanctioned behavior of economic agents with regard to scarce resources. Changes in property rights, particularly in landownership, lie at the heart of the transition to a market economy in Central and Eastern Europe and the USSR. The transfer and redefinition of landownership is in an early stage, and the outcome is unclear. Several tentative conclusions, however, are presented in the following pages: (a) Assignment or restitution of private ownership of land will not necessarily bring traditional private agriculture in the short run, although the number of private individual producers will increase. (b) The evolution of post-Stalinist collective agriculture was such that many participants in the agricultural economy have been earning rents¹ (at the expense of the state) that they cannot retain in a fully private agriculture. The transfer of land to private owners is part of a larger process in which returns to owners of many agricultural assets will decline even though agricultural efficiency will increase. (c) The initial assignment or restitution of property rights in land reflects demands of history, justice, and politics, and criteria of economic optimality have little weight. Freely functioning factor markets, including land markets, will therefore be important if agriculture in the region is to grow in efficiency and attain international competitiveness.

INITIAL CONDITIONS

A basic characteristic of socialist agriculture in Central and Eastern Europe and the USSR was strict limitation of the rights of private owners of agricultural land and other assets. Nationalization and the creation of state farms were a polar case of complex redistribution of ownership and redefinition of the rights of owners. This process began in Eastern and Central Europe prior to the advent of socialist power with the land reforms immediately after World War II. It continued with collectivization and the subsequent constant shifting of property rights within and among collective, state, and private farms. In addition there were changes in the rules defining the prerogatives of the state, the farm, and the individual.

The continual redistribution and redefinition of property rights during the socialist era differed in each country and cannot be adequately captured by tables showing the changing

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¹ In the following discussion, "economic rent" is used in its technical meaning: returns to a resource over and above the minimal return necessary to secure the resource in its present use.

distribution of landownership. Despite the heterogeneity of the process within and among countries, a common denominator linked each experience to the socialism that circumscribed economic policy and institutions. This was the state's attempt in the early period to appropriate rents for the use of agricultural resources. The attempt had political and social dimensions that dominated the economic motivation at a number of points during the socialist period.

During the post-Stalinist period, governments increasingly promised consumers a higher quality diet, thus requiring a larger volume of output from an inefficient structure. With the exception of Romania, policy in each country emphasized improved standards of living, and growth in output replaced extraction of resources as the paramount objective of agricultural policy. This emphasis on growth in output and consumption conflicted with the organizational structure imposed on agriculture as part of collectivization, since restrictions on property rights that facilitated appropriation of rent reduced farm efficiency. The inefficient structure could yield growth only with increasing subsidies. Rents collected by the government by the end of the socialist era in 1990 were negative, as indicated by large budgetary subsidies and recurrent debt write-offs.

With the transition to a market economy, the state relinquishes its role as residual claimant of returns to agricultural resources and guarantor of rising consumption of food. Owners of fixed resources, such as land and entrepreneurial skills, will gradually assume the former role, and consumers will face real prices and choose consumption levels accordingly. The transfer of title or ownership of land is meaningful primarily as a signal that this change in fundamental roles is taking place.

Asset transfer, particularly transfer of landownership, often implies a change in distribution of wealth and income in favor of the recipients. This is a frequent goal of land reform, and was achieved in the land reforms of East Asia after World War II. The effect of transfer on the distribution of wealth and income, however, depends on the value of the asset, its return in current alternative uses, and the correlation between the return to the transferred asset (land) and other assets also owned by recipients (in this case, labor).

The transfer and redefinition of property rights in land in Central and Eastern Europe is being accompanied by a shift of resources away from agriculture, through subsidy removal and rising relative prices of agricultural inputs. This observation is key to both the economics and the politics of current land programs. Although the value of land is positive as an asset, current returns are low. The reorganization of landownership and management throughout the region now reflects efforts on the part of newly recognized private owners of land to confirm their claims to land as an asset, but shield their land and labor from falling returns associated with the contraction currently underway. One way to do this is to retain links with remaining collectives (see Brooks and others 1991).

The transfer of property rights brings many complications, including adjudication of competing claims, identification of assets and boundaries, and registry of new owners. Economic conditions during the early transition present an additional and more fundamental complication. Farm organization, factor ratios, and price distortions inherited from socialist agriculture imply low or even negative rents to the land and assets for which property rights are being redistributed. The current contraction compounds the problem of low returns. The transfer of property rights will not create positive rents in the short run, although efficiency can be expected to improve in the future. Rather, removal of price and interest rate subsidies

transfers low or negative returns to owners of agricultural assets at the same time that new owners are invited to step forward with claims.

The economic stress of the early transition in agriculture is compounded by the collapse of intra-regional trade and continued poor access to markets in Western Europe (see Inotai and Tangermann, this volume). The redistribution of agricultural land is proceeding during a contraction that would reduce the value of land even in a mature economy with well-functioning product and credit markets. Continued monopoly and monopsony in product and input markets directs the contraction most strongly toward fully exposed private producers.

The economic context in which redistribution of land is proceeding explains in part the apparent puzzle that many people entitled to land express little enthusiasm to claim it for fully private management. Many of those claiming land seek simultaneously to shield their ownership from the force of the contraction by leasing land back to the collective. The implicit assumption is that collectives will depreciate the value of other assets, use preferential access to marketing channels for input and output, and use political connections (if any remain) to raise the returns to land of their members over what land could earn in fully private management. The complexity of the land programs currently underway derives thus in part from the difficulty of matching claimants and holdings, and in part from the agricultural contraction underway simultaneously.

In most countries in Central and Eastern Europe land was not nationalized. Many families retained title to land for a number of years after collectivization, and some never relinquished title even though land was collectively managed. Those who did relinquish title often did so through quasi-voluntary sales or forced contribution to the collective or the state. In Hungary many cooperative or collective farms used land to which individuals held formal title, as well as land owned by the cooperative. In Poland and in Yugoslavia most land remained in private ownership, but constraints on marketing and finance reduced the productivity of the private sector.

Land owned by the state was held in state farms, and the proportion of land so held did not exceed approximately one-quarter, with the notable exception of the USSR. In the Soviet Union all land was nationalized in 1917, although private use continued to dominate until collectivization in 1929–33. Collective farm holdings were owned by the state but leased at no charge to the collective farms.

With the consolidation of socialist agriculture in Central and Eastern Europe ownership declined in importance as most of the usual rights of owners were transferred to managers of state and collective farms, even if land titles did not transfer. Managerial status changed frequently with consolidation of farms and redrawing of farm boundaries, but ownership did not necessarily change. As a consequence, outside the Soviet Union much of the land recently managed by collective farms still had legal individual owners. These was true even of some state farm land, since state farms occasionally incorporated insolvent collective farms.

PROPERTY RIGHTS, FARM ORGANIZATION, AND EFFICIENCY

The major organizational forms of traditional socialist agriculture were the state farm, the collective or cooperative farm, and the private producer. Each form was traditionally characterized by a distinct set of property rights and contractual arrangements, and formal

analysis of incentive regimes on each is well developed in the economic literature (Ireland and Law 1988).

The evolution of socialist agricultural organization is most clearly seen in the USSR, but the prevalence of different forms and their particular characteristics differed among countries. The state is the residual claimant of the state farm, and the managerial objective function is usually characterized for analytical purposes as maximization of output subject to a constraint that the farm break even. The collective farm or producers' cooperative is usually considered to be a labor managed firm, and the objective function is formally characterized as maximization of the value of a member's share. Private producers own their own assets (except land, where prohibited), earn residual net profits, and are usually considered profit or expected utility maximizers.

The assumed objectives of economic agents in this literature are not consistent with the descriptions of actual behavior in the more traditional institutional analyses. Budget constraints are assumed to be hard, when in fact they are soft. From the earliest days, many state farms were given output targets inconsistent with breaking even. The state has put highest priority on quantities produced and absorbed profits and losses directly into the budget. Managers countered pressures for higher output quotas by concealing potential productivity gains.

On Stalinist collective farms, members divided residual net earnings, but had few instruments with which to affect earnings. Collective farm members were residual claimants but had no managerial control, and the formal economics of labor managed enterprises were irrelevant to these organizations.

Managers in both state and collective farms monitored and pressured their workers to provide enough effort to meet production targets with a bundle of inputs over which they had little influence in the short run. The main instrument of managerial discretion was regulation of effort per worker; this was accomplished by monitoring workers and distributing penalties and rewards. Incentives and behavior differed little on collective and state farms, but wages and rights of employees to participate in labor markets differed dramatically. State farm employees in the Soviet Union were mobile and received wages based on the pay scales of other state enterprises. Collective farm members were less mobile and received shared residual earnings. The budget constraint of the traditional state farm was soft and that of the collective farm hard, and the difference was maintained by differing restrictions on property rights in the workers' own labor.

Restrictions on the mobility of collective farm labor decreased in the post-Stalinist period through the dismantling of overtly discriminatory rules, better education, and sustained high demand for labor in the industrial sector. The experience of most peasants of Central and Eastern Europe with classical Stalinist collectivized agriculture was brief, although in many cases brutal. With greater labor mobility in the post-Stalin period, the stability of the collective farm as an institution came to require rough parity between the rewards of membership and alternative employment opportunities. Wages on collective farms rose and effort in both the socialist and household (private plot) sectors fell as the mobility of the collective farm labor force increased and the reservation wage represented a real opportunity for alternative employment. Growing subsidies from the state budget and the banking system financed the wage increases, and the state became the residual claimant of agriculture's financial losses in both the state and collective sectors.

The transfer of residual claims from workers to the state in the cooperative sector did not require a change in ownership, but did involve a fundamental change in property rights: the right of rural people to seek employment where the rewards are highest. The transfer took place at a time when chemical, biological, and mechanical inputs were changing agricultural technology and increasing opportunities for costly misuse of purchased inputs, both on state and collective farms. Managers, still encouraged to meet output quotas, were able to substitute purchased inputs for effort, although the elasticity of substitution may not have been high. Managers on farms where expenses exceeded income passed the loss on to the residual claimant, the state.

To what extent is the budget constraint a property rights issue? Our interest at present is to understand the behavioral implications of alternative property rights regimes; in particular the implications of new property rights for efficiency of resource use. The budget constraint defines the meaning and value of property rights and the penalty and reward structure. It is difficult to derive any behavioral implications of property rights without specifying whether the budget constraint is hard or soft, and if soft, with what limitations. Yet budget constraints can be soft for privately owned firms, as well as for those owned by the state. The relevant issue appears to be the visibility of the budget constraint. When the state steps in to subsidize a privately owned firm in a market economy, the bailout is visible and can usually be measured. The visibility and quantifiability of the assistance facilitate analysis of the social costs of intervention, and this discussion signals the recipient as to whether the intervention can be expected on a regular basis. When the state subsidizes losses with formulaic regularity in a nonmarket environment, the subsidy is institutionalized and often hard to measure and observe. The two kinds of intervention will have different effects on behavior. Widespread state ownership in a nonmarket economy appears more conducive to very soft budget constraints and resulting behavior.

János Kornai has argued that a firm with a soft budget constraint will have an approximately infinite demand for inputs (Kornai 1982). Stephen Goldfeld and Richard Quandt have formalized analysis of the behavior of a profit maximizing firm that can pass negative profits to the state, and have found demand for inputs greater than in the case where the budget constraint is hard (Goldfeld and Quandt 1988). These theoretical studies imply that soft budget constraints increase tolerance for inefficiency².

In a number of partial reforms of recent years, attempts have been made to harden the farms' budget constraint by raising the importance of financial performance in the conflicting indicators that guided managerial behavior. The attempts were unsuccessful for several reasons. They were not mirrored by changes in the financial sector that governed the behavior of lenders and the supply of credit. Furthermore, efforts to make producers responsible for financial performance were not accompanied by measures to increase their control over choice and use of inputs. Producers denied control rejected financial accountability. People employed in agriculture throughout the region therefore entered the transition with subsidized incomes that

² Empirical investigation of comparative technical efficiency of socialist and private farms has been inconclusive, in part because of the paucity of appropriate farm level data, and in part because of difficulties in controlling statistically for differences other than farm organization. For work that addresses this issue, see Barreto and Whitesell 1988, Danilin and others 1985, Koopman 1989, Murrell 1990, Rosefielde 1981, Skold 1990, and Whitesell 1988.

they could maintain as private producers only with significant investment of their own capital, assumption of risk, and longer and harder labor.

OWNERSHIP, MANAGEMENT, AND USE OF LAND DURING THE TRANSITION

At the start of the transition, it was clear that collective and state farms would have to change as the administrative system of which they were part was dismantled. Neither the mechanism nor outcome of change was obvious at the start of the transition. Legislative debate in 1990 and action in 1991 clarified the legal framework of the new farm structure in various countries. In Bulgaria, Czechoslovakia, Hungary and Romania, the decision to restore rights of former owners has been universal. Debate on the legal foundation for reaffirming property rights in land proceeded throughout the region in 1990, and until late in the process it was not obvious that restitution would be the outcome. Parliaments passed land laws pertaining to the collective farm sector (the largest share of agricultural land) in Romania and Bulgaria in February 1991, two months later in Hungary, and in May 1991 in Czechoslovakia. Each of these laws recognizes the rights of landowners just prior to collectivization, and sets up a procedure for reinstating the property right or awarding equivalent compensation.

Since most agricultural land is being returned to people perceived to be rightful owners, recipients do not pay, and the land distribution has had little direct impact on macroeconomic balances. In the parts of the Soviet Union in which land was nationalized in 1917 and collectivized between 1929 and 1933, it is difficult to imagine how rights of former landowners could be reinstated. The course of decollectivization is thus likely to be quite different in the former USSR, although the Baltic states have followed the Central and Eastern European approach and recognized prior land rights.

The decision to restore land rights emerged independently in each of the countries, and the conditions and procedures for restitution differ considerably. The Romanian land program embodies the judgment that costs of delay are greater than those of moving ahead before all complications are foreseen and forestalled. Local Land Commissions in each district were established quickly after passage of the law, and began receiving claims. Households can claim a maximum of 10 hectares, and can submit a variety of evidence to support their claims. The period for submission and judgment of claims ended on May 20, 1991 at which date the land commissions posted preliminary rulings.

When possible, claimants are given land actually owned prior to collectivization. When this is not feasible, a piece of equivalent size and quality is returned. When the original land was parceled, the parceling is deliberately duplicated in the returned land. Many households in the Danubian plain will receive 4 or 5 hectares divided into several parcels. Holdings in the hill areas will be larger, and broken into more parcels.

Romanians who receive land through restitution of their rights can sell it immediately if they so choose, or buy more up to a maximum holding of 100 hectares per household. Family members and neighbors have rights of first refusal on farm land for sale, and this restriction on free sale is intended to address the fragmentation problem. Since in the densely settled areas of intense agriculture almost all land will be distributed through restitution, an active land market could develop rather quickly.

According to preliminary results of a survey conducted by the World Bank in Romania in July of 1991, 96 percent of rural households sampled that did not own land prior to the February 1991 law expected to receive land through claims³. Most claimed land based on prior ownership, and the average claim was for approximately 5 hectares. Most households receiving land indicated intentions to join a new producers' association, and lease part of their land to the association. Those intending to farm all of their land individually had higher incomes and owned larger holdings (10 hectares or more). The land distribution program in its early phase appears to have distributed ownership of the land rather widely without fragmenting management as much as ownership. The new associations forming in Romania are not the former collective farms, but are built from reorganization of the assets and membership of the farms. A form of collective management created through leasing contracts thus provides a gradual change in management even though the redistribution of ownership has been rapid. The Romanian experience indicates that even though land markets are not functioning yet, land contracts between individual households and associations can be negotiated quickly and at low cost, compared to outright sale or private rental of land. Landowners who enter into contracts with associations in general keep part of their land in fully private management, and lease the remainder to the association.

The economic viability of these producers associations in a market economy will be tested in the coming seasons. Those who join associations expect them to survive; 68 percent of new members expect to remain members for a long time. Since the associations are not viewed as transitory institutions, it is important that their liability structure be clarified along with procedures for members to withdraw and take their share of non-land assets with them. The right of members to withdraw land from collective management upon termination of the lease is a precondition for ownership to have meaning, but will create uncertainty for associations created by amalgamating holdings of many members, particularly since holdings are fragmented.

The Romanian land distribution creates many parcels of approximately 1 hectare. Fragmentation is perceived as a problem by those who express a preference for farming individually. The short-term solution to fragmentation may be association, and the fragmentation may provide impetus for the current growth in association membership. Over time, purchase and sale of land should reduce fragmentation. Market-based solutions to fragmentation of farm land in Western Europe after World War II were not adequate to consolidate holdings, and administrative consolidation was necessary. The chance for success in market-based consolidation is greater in Romania now, since all rights are distributed simultaneously and many recipients will be trying to adjust their initial claims before removing land from collective management. The future of producers associations will depend in part on the development of land markets and progress in land consolidation.

People who worked on cooperative farms in Romania but cannot claim any land through restitution can claim on the basis of their labor input. In the Romanian survey, approximately 20 percent of households reported claims for reasons other than prior ownership, and most such claims were 2 hectares or smaller. People receiving land in recognition of their contribution of

³ Unpublished preliminary analysis of survey conducted by the World Bank.

labor cannot sell their land for 10 years. The amount of land tied up by this restriction is not significant.

The land law in Bulgaria was also passed in February 1991, but political stalemate and administrative inertia delayed its implementation. The National Land Council, the main administrative organ of implementation, was not appointed until May 31, 1991, and appointment of local land commissions was attendant upon the formation of the national commission. Consequently, people who wanted to claim land in the first half of 1991 had nowhere to take their claims. Many of the records showing who brought land into the collectives are held by the farms, and even managers who wanted to speed the restitution of land rights could not submit them to nonexistent local commissions. Some land has been returned under temporary use rights, but transfer of title is much delayed.

Administrative delay has slowed the implementation of the Bulgarian law. The philosophy of land distribution embodied in the law and the implementing regulations is by nature a slow one. Rather than relying on market trades to improve a quick and imperfect distribution of rights, the Bulgarian approach attempts construction of appropriate holdings through administrative assignment. Local land commissions accept and adjudicate claims, and when a substantial number of claims have been verified, turn them over to a team of specialists who draw up a local map of the allocated holdings.

This approach is deemed necessary for several reasons. The Bulgarians want to avoid parceling, and doubt the efficacy of market-based consolidation. Market-based solutions are indeed unlikely to work, since the law prohibits purchase and sale of land by private individuals for 3 years. In many places the amount of land that can be restored is only a proportion of that claimed, since development has changed the contours and use of land, and agricultural area has declined. In these areas all claims will be prorated by the necessary proportionate adjustment. The effort to achieve justice and economic efficiency through administrative meticulousness can be contrasted with the Romanian priority on speed. The costs and benefits of each approach are not yet clear. The Bulgarian effort to create consolidated holdings through the initial distribution may speed the emergence of genuine private agriculture, but even consolidated holdings are likely to be small. Thus in both Romania and Bulgaria, the speed with which land markets develop and allow trades in initial holdings will be an important determinant of growth in efficiency.

In Hungary, the initial attempt to return agricultural land to prior owners in 1990 was struck down by the Constitutional Court, with the ruling that restitution of ownership of agricultural land must be considered along with that of other assets. In April 1991 landowners, along with dispossessed owners of other property, were granted vouchers redeemable for agricultural land or other assets. Landowners who continued to hold title to lands managed by the cooperative were granted the return of their managerial rights unconditionally. Thus in Hungary, the restitution for those who relinquished title is essentially monetary, and the impact on demand for land depends on economic agents' assessment of the value of land compared to other assets. Many who use their vouchers to buy land are likely to take a consolidated holding and remove it from collective management. Others with a speculative demand for land may buy it with vouchers, but rent the land to collectives or other individuals. Those who resume use rights over land they always owned are more likely to have fragmented pieces, and may keep the land in collective management longer.

In Czechoslovakia, the law mandating return of agricultural land to prior owners who will cultivate it passed only in late May 1991, and at the time of passage, little interest in claiming land was reported. In Czechoslovakia, the agricultural sector is a relatively small part of the national economy, due largely to the industrial development of the Czech republic and its dominance in the aggregate measures. Agriculture is more important in Slovakia. Food markets approximately cleared even prior to the price liberalization, and few citizens of the country perceive that they have had or now have a "food problem." Thus the need to change the inherited structure of agricultural production has been late in coming, although a fully open trade regime would demonstrate its high cost relative to world levels.

The agricultural contraction is just beginning in Czechoslovakia, and difficulties marketing meat and milk are pulling farm incomes down. Pressure for change is increasing, but it is too early to predict whether the form of change will be protection of the old structure, or the start of decollectivization. Since the agricultural sector is a smaller share of the Czechoslovak economy, and given the complications of federal politics, pressures for protection and subsidy will be great.

In Poland, the state sector owns only about 20 percent of agricultural land, since the remainder of land was never collectivized, and remains in fragmented private ownership by smallholders. Although the proportion of marketed output that originated in the state sector was greater than its share of landownership, the excess supply of food occasioned by the Polish "big bang" diminished the perceived urgency to reorganize state farms. Those most agitated about the fate of state farms were their employees, who favored transfer of land and assets to the work force. The disposition of land in Polish state farms has thus been deferred.

Changes in farm organization and land use in the former republics of the USSR are less advanced than in Central and Eastern Europe. With the exception of the Baltics, restitution of rights of prior owners has few proponents, since land in much of the rest of the country has not been in private ownership since 1917. Several mechanisms have been instituted since 1990 to transfer land to private use and, more recently, to private ownership. The amount of land transferred has been limited by weakness in the transfer process, and constraints in the economic and political environment that reduce the attractiveness of independent private agricultural production. Among the latter is the continued and enhanced political strength of defenders of the old agricultural order at the local level.

The Russian land decree of December 27, 1991 affirms the right of workers on state and collective farms to shares of the assets, both land and other, of the farm, and sketches a process by which the shares can be created, assigned, and traded. A prohibition on sale of land for 10 years remains, and the mechanism for implementing the new land decree is vague. The Russian government has made an important statement with the December 1991 land decree, and the privatization of agricultural production will accelerate, although from a very small base. The experience in Central and Eastern Europe suggests that even with radical redistribution of ownership, changes in farm organization and management are slower. It is unlikely therefore that the new land decree will bring a rapid demise of state and collective farms in Russia, although their organization and operation will clarify the profitability of different activities within the farm and facilitate the exit of members who choose to leave.

Changes in landownership and farm structure in Ukraine and Belarus lag behind those in the Russian federation. Institutional support for state and collective farms remains strong in

early 1992, and the current governments have not called for substantial privatization of agricultural production or redistribution of landownership. Privatization has proceeded de facto through parts of the Caucasus, particularly in the mountainous herding regions and vineyards, and in Armenia formal private ownership of land is widespread. Throughout the irrigated areas of Central Asia collective farms still prevail, with somewhat greater privatization in the mountain areas of Kyrgyzstan.

CONCLUSION

In summary, Central and Eastern European land distribution programs are in practice quite diverse, and are not what most people outside the region expected. In surveying the economic options, few outside economists would have chosen physical restitution of rights of prior owners as the preferred solution (see Vickers and Yarrow 1990). The economic difficulties are evident. Moral issues seldom raised are also relevant: what about the rights of people killed or dispossessed prior to 1946 or 1948 or the date that serves the interests of those now represented politically? These issues have been raised, but not resolved, in Hungary, and have not figured importantly in debate in the other countries.

The restitution approach has an economic advantage to complement its apparent political appeal, and counter some of the economic problems it raises. Had land been distributed without payment to the agricultural work force with no higher principle than "land to the tiller," it would have been easy to exclude rural people from further distribution of state owned assets, on the grounds that they already received their fair share. Since landowners in Central and Eastern Europe have instead received back property that was rightly theirs all along, there can be little justification for excluding rural people from a share of assets accumulated by the state. Thus, when privatization swings into full force through vouchers or distributed shares, rural people will be integrated into the new capital markets. Even under restitution, however, rural people are occasionally excluded from more general programs. For example, in Romania people who receive land are not subsequently eligible for unemployment benefits.

In the Commonwealth of Independent States, changes in land tenure are not far advanced and the connection between land reform and more general privatization is unclear.

There has been speculation and concern that the land programs will impede growth in efficiency by distributing land in small fragmented holdings not conducive to modern competitive agriculture. It is difficult to predict what farm structure will be economically superior, but even if it could be foreseen, creation of that structure through administrative assignment would be time-consuming and would contradict the concern for justice that has prevailed throughout the region. Since economic efficiency has not been the decisive criterion in the design of most land programs, the most useful policy strategy is to remove impediments to transactions in land and asset markets, and use tax and credit policy to encourage consolidation of small private holdings. Financial restructuring of remaining old collective farms or regulatory supervision of new associations will be important in promoting competitive services in rural areas and preventing monopolistic practices in machinery and marketing services. If activity in factor markets grows in an increasingly competitive environment, efficiency should improve over time, even if the initial assignment of property rights is not optimal.

REFERENCES

- Barreto, Humberto, and Robert S. Whitesell. 1988. *Estimation of Output Loss from Allocative Inefficiency: Comparison of the Soviet Union and the U.S.* Research Memorandum no. 109, Center for Development Economics, Williams College, Williamstown, Mass.
- Brooks, Karen M. 1991. "Decollectivization and the Agricultural Transition in East-Central Europe." *Transnational Law and Contemporary Problems* 1(2), pp. 507-537.
- Brooks, Karen M., J. Luis Guasch, Avishay Braverman, and Csaba Csaki. 1991. "Agriculture and the Transition to the Market." *Journal of Economic Perspectives* 5(4), pp. 149-161.
- Danilin, V. I., I. S. Materov, S. Rosefielde, and C. A. K. Lovell. 1985. Measuring Enterprise Efficiency in the Soviet Union: A Stochastic Frontier Analysis. *Economica* 52(August), pp. 225-33.
- Goldfeld, Stephen M., and Richard E. Quandt. 1988. "Budget Constraints, Bailouts, and the Firm Under Central Planning." *Journal of Comparative Economics* 12 (4), pp. 502-20.
- Ireland, Norman J., and Peter J. Law. 1988. "Management Design Under Labor Management." *Journal of Comparative Economics* 12(1), pp. 1-23.
- Koopman, B. 1989. "Efficiency and Growth in Agriculture: A Comparative Study of the Soviet Union, United States, Canada, and Finland." Staff Report no. AGES 89-54, Agriculture and Trade Analysis Division, Economic Research Service, U.S. Department of Agriculture, Washington, D.C.
- Kornai, János. 1982. *Growth, Shortage, and Efficiency*. Berkeley and Los Angeles, Calif.: University of California Press.
- Murrell, Peter. 1990. *The Nature of Socialist Economies: Lessons from Eastern European Foreign Trade*. Princeton, N.J.: Princeton University Press.
- Rosefielde, Steven. 1981. "Comparative Advantage and the Evolving Pattern of Soviet International Commodity Specialization, 1950-1973." In Steven Rosefielde, ed., *Economic Welfare and the Economics of Soviet Socialism: Essays in Honor of Abram Bergson*. New York: Cambridge University Press.
- Skold, Karl. 1990. "The Relationship Between Technical Efficiency and Farm Characteristics in the Stavropol Region, USSR." Staff Paper, Center for Agricultural and Rural Development, Iowa State University, Ames, Iowa.
- Vickers, John, and George Yarrow. 1991. "Economic Perspectives on Privatization." *Journal of Economic Perspectives* 5(2), pp. 111-133

Whitesell, Robert S. 1988. "Why Does the Soviet Economy Appear to Be Allocatively Efficient?" Research Memorandum no. 113, Center for Development Economics, Williams College, Williamstown, Mass.

AGRICULTURAL PRICE REFORM: EFFECT ON REAL INCOMES AND THE INFLATIONARY PROCESS

*Michael Marrese**

The market-oriented transformation of formerly centrally planned economics includes such components as price liberalization, property rights reform, anti-inflationary monetary and fiscal policies, elimination of the monetary overhang, formation of an independent central bank, recapitalization of competitive commercial banks, demonopolization and rehabilitation of viable enterprises, and creation of regulatory agencies. Up to the end of 1990, this transformation had produced substantial price increases but only modest supply responses, causing a great deal of popular skepticism. Successful restructuring of Central and Eastern European and Soviet agriculture could help to eliminate this skepticism by stimulating greater effort and more efficient utilization of resources that would generate, in the near term, visible benefits for much of society. One necessary condition for revitalization of agriculture is price reform.

This paper investigates two questions in an effort to describe the conditions under which agricultural price reform will improve a population's expectations about the short-term prospects of economic transformation. First, what sorts of price reform can be undertaken, what magnitudes of price changes are under consideration, and who are the winners and losers? Second, can agricultural prices be liberalized without triggering runaway inflation or a recession?

The answers to these questions are interrelated. Ideally, prices would be liberalized in a manner that produces a one-time jump in agricultural and food prices (as agricultural subsidies are eliminated and price controls are lifted) yet does not increase core inflation or inflationary expectations. This ideal will be attained to the extent that (a) price liberalization has a positive impact on supply; (b) inflationary expectations are curbed by the government's credibility as an inflation fighter; (c) printing money is not used to cover the rise in the government's fiscal deficit due to the compensation provided to the population for the increases in food prices; and (d) monetary and regulatory policies control the money supply, after the one-time jump has taken place, in a manner consistent with the rate of core inflation before price liberalization.

In practice, agricultural price liberalization has been blamed for increases in inflation. This paper argues that inflation has not been a result only or primarily of price liberalization. Rather, monetary policy has tended to be looser than necessary, regulatory authorities have been

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unable to control the increase in inter-enterprise credit and the lengthening of tax arrears, and wage regulation has been less than fully effective.

The next portion of this paper presents a stylized, qualitative description of the agricultural system that existed in Central and Eastern Europe and the Soviet Union around 1975, with a special emphasis on price distortions and quantitative restrictions. Following that is a description of the pre-1989 Hungarian and Chinese attempts to reform their versions of the stylized system. It also includes an evaluation of how valuable this earlier Hungarian and Chinese experience may be for the agricultural transformation of Central and Eastern Europe and the Soviet Union in the 1990s. Empirical measures of the extent of price distortion in Hungary, Poland, Czechoslovakia, and the Soviet Union are discussed in the next section, followed by an examination of policy options for the reduction of agricultural price distortions and the qualitative impact of these policies on inflation. The penultimate section contains an analysis of recent Hungarian, Polish, Czechoslovak, and Soviet experience with agricultural price reform.

PRICE DISTORTIONS AND OUTPUT RESTRICTIONS

In 1975, agricultural price distortions and output restrictions differed across Central and Eastern Europe and the Soviet Union, yet generally fell into several categories.

Agricultural inputs. Large-scale farms¹ had access to energy, fertilizer, seed, and machinery at prices lower than both domestic prices and the relevant opportunity costs (prevailing international market prices adjusted for all applicable transport, carriage, and insurance costs). Subsidies for agricultural inputs were given directly to the state-owned firms that produced these inputs so that these firms could sell to large-scale farms at subsidized prices. Such state-owned firms had substantial monopoly power and tended to be inflexible in meeting the demands of farmers. Input prices tended to be the same for all large-scale farms. In some countries, small-scale producers were also able to obtain certain inputs at the same subsidized prices as large-scale farms.

Agricultural credit. The financial system of planned economies was organized around a monobank that distributed credits at "below equilibrium" interest rates according to government priorities rather than ability to repay the loans. Within the financial system, agriculture received its allocation of credit. Among other things, this meant that large-scale farms never directly competed with industrial firms for credit. Moreover, credit for large-scale farms was often geographically rationed to maintain historical production patterns. Finally, the state would, in some countries, regularly write off the accumulated debts of poorly performing farms.

¹ Large-scale farms refer to state farms, all forms of agricultural cooperatives, and agricultural *kombinats*. The modifier "large-scale" applies more completely to agriculture in Bulgaria, Czechoslovakia, the GDR, Hungary, Romania, and the Soviet Union than to agriculture in Poland and Yugoslavia. In the latter two countries, private, small-scale farms are responsible for most of agricultural output, though state farms still play an important role.

Land. Markets for the sale and purchase of agricultural land were underdeveloped. However, within each farm, every piece of land had an opportunity cost.

Agricultural outputs. Procurement prices for agricultural outputs deviated greatly from the appropriate opportunity costs. Usually costs for grain crops were below corresponding opportunity costs, whereas prices for live animals and animal products were above them. Cash crops (vegetables, fruits, industrial crops such as cotton and tobacco, and specialty items) also tended to have procurement prices below relevant opportunity costs, but the procurement prices for cash crops were often more attractive to farmers than those for grain crops. Governments did not adjust relative prices to ensure a mix of production consistent with government objectives. Rather, governments implemented output restrictions, namely farm-specific lower bounds on the sown area devoted to grain crops and farm-specific upper bounds on the sown area devoted to cash crops. In addition, governments either forbade or severely restricted farm involvement in nonbasic agricultural areas (food processing, construction, trade, and other industrial pursuits).²

Subsidies for agricultural exports. Agricultural trade worldwide is distorted by export subsidies. The export surplus countries of Eastern Europe were not exceptions to this rule, although their commodity-specific subsidies for agricultural exports to the West were lower than similar West European subsidies. East European subsidies in agricultural trade with member countries of the CMEA were difficult to estimate because intra-CMEA trade consisted of bilateral bargaining and hundreds of indicative lists. The resulting barter values were unrelated to domestic prices. This gap encouraged East European governments to engage in "price equalization." In practice, this meant that food processors and large-scale farms exporting to CMEA countries received export subsidies in order to create "equal" domestic and export prices.

Nonuniformity across geographic areas. Differences in the quality of land and an inability to develop satisfactory land taxes led governments to introduce locality-specific output prices, especially for grain crops. Roughly speaking, output prices for cash crops and nonbasic agricultural activities were the same for all quality types. However, output prices for grains were lowest for farms with excellent-quality land, higher for farms with average-quality land, and highest for farms with poor-quality land.

Food for the population: Retail prices for breads, meat, dairy products, and other nonprocessed foods were much lower than corresponding domestic production costs. This practice of subsidizing consumers contributed to federal budget deficits and inflationary pressure.

Price distortions and output restrictions have been common characteristics of agriculture throughout the world, not only in Eastern Europe and the Soviet Union. However, three other dimensions tended to distinguish East European and Soviet agriculture from that of most other countries. First, incentives on large-scale farms discouraged farmers from working hard and

² The restrictions on nonbasic agricultural activity were loosened in the 1970s. See Marrese 1986 for a discussion of this loosening process in Hungary.

long at their official jobs. This behavior reflected inadequate material rewards for individuals and other well-known problems with planned economies (the ratchet effect, profit leveling, and soft-budget constraints). At the same time, farmers had the option of working part-time on household plots, where material rewards and personal satisfaction were higher than on large-scale farms.

Second, agricultural and food-processing bureaucracies at the national, regional, and local levels actively participated in decisions that influenced farm-level production patterns, access to inputs and credit, investment, and distribution of output. These bureaucracies made poor decisions. For instance, expensive investments were made in farm buildings and silos that reflected an overoptimistic evaluation of the benefits of centralization, economies of scale and uniformity. In addition, local authorities tended to view trade, both domestically and abroad, with little enthusiasm. Rather, satisfaction of local needs had top priority, followed by fulfillment of centrally determined plan targets.

Third, incentives that governed harvesting, storage, food processing and food distribution were often poor for the same reasons that farm-level incentives were poor. This led to waste of agricultural output.

GRADUAL RATIONALIZATION: THE HUNGARIAN CASE

Beginning in the 1960s, Hungary began substantial reform of the traditional structures of centrally planned agriculture. The process of gradual rationalization had several elements:

- ▶ Property rights reform was instituted via leasing portions of large-scale farms to small groups of farm workers and via some decentralization of decisionmaking authority within farms. In practice, this was the most successful aspect of gradual rationalization.
- ▶ Input prices were to be uniform for all farms and all industrial enterprises, and input subsidies were to decline. In practice, limited progress was made.
- ▶ Relative procurement prices were to move toward relative opportunity costs over time. In practice, this meant that procurement prices rose providing markedly better incentives for the production of agricultural goods. There was progress in creating relative domestic prices that were closer to relative international prices. At the same time, higher procurement prices were not fully passed on to consumers.
- ▶ Differences in government regulations for farms and for enterprises were to disappear over time. In practice, differences in the regulation of wages

and profits plus differential access to credit continued to separate agriculture from industry.³

There is a general consensus among economists that this process of gradual rationalization produced highly visible, positive results (see Csaki and Varga; and Lin, Burcroff, and Feder this volume). Nonetheless a number of questions and issues remain concerning the strategy of gradual rationalization.

To what extent did agriculture's apparent success depend on subsidies? Most populations look upon widely distributed government handouts favorably, especially if they are not able to pinpoint the costs of subsidization. This question may also be addressed in a tentative manner by noting that as total Hungarian agricultural subsidies (excluding consumer and export subsidies) as a percentage of state budgetary expenditures declined during the 1980s, the profitability of agricultural cooperatives and state farms fell sharply (table 8-1). Also notice that heavily subsidized basic agricultural activities experienced very slow growth in the 1980s, while the relatively unsubsidized industrial activities on agricultural cooperatives and state farms grew rapidly. More generally, Hungarian agricultural success has been greater with respect to output measures than efficiency measures partly because Hungarian agriculture became too energy-intensive as Hungarian farmers responded to artificially low energy prices.⁴ Most importantly, the 51.5 billion⁵ forints of total agricultural subsidies in 1988 (table 8-2) equal 25.3 percent of 1988 agricultural GDP, which is a clear sign that Hungary's agricultural success was heavily dependent on subsidies (SE 1988, p. 57). If so, the gradual rationalization was a prelude to, and not a substitute for, deeper systemic change.

Despite the weaknesses of the strategy of gradual rationalization, it exhibited a number of strong points. First, among subsidies for rent, water, mortgages, other housing, fuel, milk, transportation, and educational supplies, milk subsidies were distributed most evenly and least regressively among the different income classes in Hungary in 1988 (Ábel 1990, p. 30). This supports the general notion that gradual rationalization produced visible benefits to all income groups without creating disruptive tensions between rural and urban populations and without inflaming regional rural jealousies. (See also the almost identical movements in real wages of state-sector employees versus employees of agricultural cooperatives, table 8-1.) Second, gradual rationalization achieved its aim of creating rural employment via the stimulation of nonbasic agricultural activities. Third, gradual rationalization produced stunning gains in outputs, which increased agriculture's ability to contribute toward net dollar-export earnings. Finally, the strategy of gradual rationalization emphasized equality across social groups and income classes. Table 8-3 shows that, in 1989, when Hungary started a four-year program to

³ Two references, among the many available, to the process of gradual rationalization in China and Hungary are Rabushka 1987, and Marrese 1986.

⁴ See Marrese 1983 for evidence. An example of the output-oriented influence of subsidized energy prices appears in the mid-1980s when fertilizer usage per hectare began to decline as energy subsidies in agriculture fell (table 8-1).

⁵ A billion is 1,000 million.

Table 8-1. Hungary: Selected Real Wages and Inflation Statistics, 1981-88

<i>Item</i>	<i>1981</i>	<i>1982</i>	<i>1983</i>	<i>1984</i>	<i>1985</i>	<i>1986</i>	<i>1987</i>	<i>1988</i>
Cultivated area (thousands of hectares)	8,285	8,274	8,269	8,260	8,253	8,249	8,247	8,243
Active earners in agriculture's basic and nonbasic activities (thousands)	983.7	1,004.0	1,028.8	1,018.2	981.1	933.1	890.0	860.0
Active earners in agriculture's basic activities (thousands)	742.2	732.7	721.1	693.9	660.6	623.4	589.0	569.3
Investment in agriculture's basic activities, current prices (billions of forints)	28.559	30.302	27.774	26.354	25.640	28.880	37.477	27.283
Current production subsidies, ^a current prices, (billions of forints)	15.527	16.779	17.743	17.585	17.568	22.174	30.888	—
Investment subsidies, ^a current prices (billions of forints)	4.775	4.070	2.480	2.163	2.028	2.617	4.597	—
Total agricultural subsidies, ^a current prices, (billions of forints)	31.970	32.137	30.577	29.764	27.892	32.333	39.950	—
Total agricultural subsidies (percentage of state budgetary expenditures)	6.50	6.27	5.44	5.06	4.44	4.38	5.32	—
Fertilizer usage (kilograms per hectare)	225	232	241	233	205	212	211	218

(continued)

Table 8-1. Continued

Item	1981	1982	1983	1984	1985	1986	1987	1988
Profits of agricultural cooperatives per 100 forints of fixed assets, ^b (current prices)	12.0	11.8	9.7	9.5	9.4	9.6	9.6	6.8
Profits of state farms per 100 forints of fixed assets ^b (current prices)	7.3	7.0	7.2	7.8	8.5	9.2	9.9	6.6
Agricultural production, basic activities, volume indices (1980=100)	102.0	109.4	106.5	109.6	103.5	106.0	103.9	108.4
Agricultural production, nonbasic activities, volume indices (1980=100)	117.6	139.8	146.6	148.6	150.0	158.2	172.3	171.0
Agricultural production, industrial activities, volume indices (1980=100)	116.2	142.2	153.0	162.6	169.8	180.4	196.0	190.7
Agricultural production, construction activities, volume indices (1980=100)	130.8	147.9	142.0	113.3	97.4	98.4	110.8	98.3
Agricultural production, all activities, volume indices (1980=100)	106.7	115.1	115.1	117.0	112.8	116.9	118.6	120.8
Food exports (percentage of total exports)	25.2	24.9	23.0	22.8	21.3	20.1	19.2	20.7
Food exports in U.S. dollars (percentage of total U.S. dollar exports)	233.0	32.2	28.8	29.3	28.6	26.1	24.5	25.8

(continued)

Table 8-1. *Continued*

<i>Item</i>	<i>1981</i>	<i>1982</i>	<i>1983</i>	<i>1984</i>	<i>1985</i>	<i>1986</i>	<i>1987</i>	<i>1988</i>
Food imports in U.S. dollars (percentage of total U.S. dollar imports)	13.6	10.4	12.1	12.0	11.0	11.7	10.7	11.3
Food exports minus food imports (current prices, billions of forints)	47.0	57.9	59.3	65.2	61.2	51.9	52.9	68.6
Food exports minus food imports, U.S. dollars (current prices billions of forints)	32.2	41.5	30.6	44.4	39.7	27.4	30.7	45.9
Real wage index per state-sector employee (1980=100)	101.4	100.4	97.2	94.9	96.1	97.9	97.5	92.7
Real wage index per employee of agricultural cooperatives, (1980=100)	102.5	102.2	98.3	94.6	96.2	98.6	96.8	94.5
Consumer prices for state-sector employees, (1980=100)	104.6	111.7	120.0	129.8	138.8	146.3	158.7	183.8
Consumer prices for employees of agricultural cooperatives, (1980=100)	104.6	112.0	120.2	129.9	138.6	145.8	158.0	183.0

— Not available.

a. Exclusive of consumer subsidies. Current production subsidies include: indirect subsidies of fertilizers, plant protecting agents, and weedkillers; direct subsidization of meat and milk production; and support of farms with poor land quality via price supplements and tax advantages.

b. Profit includes all subsidies and excludes all taxes, therefore is not a totally accurate measure of efficiency. It is based on both basic and nonbasic agricultural activities.

Source: KSE 1985, pp. 22-77, KSE 1988, pp. 54-57; MSE 1982, pp. 8-9; MSE 1988, pp. 9-10; PFH 1987, pp. 22-27; PFH 1988, pp. 54-57; SE 1984, pp. 149, 150, 162; SE 1987, pp. 136-137; SE 1988, pp. 130, 131, 142; SE 1989, p. 217; and information from the Hungarian Ministry of Finance.

reduce the subsidies described in table 8-2 from 215 billion forints in 1988 to 82 billion forints by 1993, the impact of all types of subsidy reduction, food included, fell evenly across four different social groups. There is also evidence that during the subsidy-reduction program the poor, who suffered the most from the food price increases, were overcompensated for the reductions, while other income groups were not compensated fully (Ábel 1990, p. 33).

MEASURING AGRICULTURAL SUBSIDIES

Table 8-4 provides estimates of government subsidies for agricultural inputs, agricultural credit, farms with poor-quality land, and agricultural output (including consumer subsidies for milk) for four countries: Hungary, Poland, Czechoslovakia, and the Soviet Union. These figures exclude agricultural export subsidies and subsidies of energy used by farmers and producers of agricultural inputs. These estimates, though not exactly comparable from country to country, provide a sense of the magnitude of the price adjustment these countries have been undertaking as agricultural prices are liberalized and other agricultural subsidies are eliminated (Ábel 1990, p. 33).

From the figures in table 8-4, it is clear that the Soviet Union's problem with agricultural price distortion in 1988 was much worse than that of the other three countries. In addition, Hungary's strategy of gradual rationalization was successful in reducing the burden of agricultural subsidization, especially relative to countries like Poland and Czechoslovakia, which embarked on fewer changes prior to the transition.

Reductions in agricultural subsidies are generally accompanied by some compensation to the population and a monetary policy that accommodates a portion of the corrective one-time rise in average prices. In order to gain a sense of the inflationary impact of reducing the subsidies described in table 8-4, one could utilize an econometric model based on pre-perestroika data to simulate the impact of subsidy reductions, compensation, and accompanying monetary policy. Charap and Gronicki (1990) create a model of the Czechoslovak economy using annual data from the early 1970s to 1988 to investigate the implications that reductions in subsidies on foodstuffs, taxes on other goods and services (durables, apparel, and luxury items), and subsidies on nonmaterial services (housing, personal services, financial services, and so forth) would have on, among other dimensions, consumer prices and real wealth. Since subsidies on foodstuffs were the largest component of subsidies,⁶ the work of Charap and Gronicki provides a rough estimate of how price reform in an old regime (a pre-perestroika Czechoslovakia that adopted the strategy of gradual rationalization) would influence inflation and real wealth. In addition, their work simulates subsidy reductions under various types of monetary and fiscal policy.⁷

⁶ In 1988, subsidies for foodstuffs and nonmaterial services were 6 and 2 percent of GNP, respectively.

⁷ Both before and after communist rule in Czechoslovakia, a noninflationary monetary policy was pursued.

Table 8-2. Selected Hungarian Consumption and Production Subsidies, 1988
(billions of current forints)

<i>Sector</i>	<i>Production</i>	<i>Consumption</i>	<i>Total</i>
1. Coal mining	6.2	n.a.	6.2
2. Other mining	2.0	n.a.	2.0
3. Household energy	n.a.	20.3	20.3
4. Other subsidies (culture)	2.0	n.a.	2.0
5. Agricultural subsidies, of which:	51.5	n.a.	51.5
6. Current production	24.1	n.a.	24.1
7. Market intervention	11.9	n.a.	11.9
8. Tax refunding	15.5	n.a.	15.5
9. Local transport	n.a.	12.8	12.8
10. Railways	4.5	1.5	6.0
11. Other transport	0.6	1.2	1.8
12. Milk	n.a.	5.2	5.2
13. Water	n.a.	6.6	6.6
14. State-owned flats	n.a.	11.4	11.4
15. Commercial policy fund	4.5	n.a.	4.5
16. Total	71.3	59.0	130.3
17. Enterprise investment subsidies	15.4	n.a.	15.4
18. Medicine	n.a.	15.8	15.8
19. Rouble export	55.0	n.a.	55.0
20. Total	141.7	74.8	216.5

n.a. Not applicable.

Source: Négy évre szóló támogatás-leépítési programot fogadott el a TGB (Four-year subsidy reduction program, approved by the Planning and Economic Committee), *Vilaggazdaság*, October 28, 1988, p. 3; reprinted in Ábel 1990, p. 28.

Table 8-3. Hungarian Consumer Price Index for Different Social Groups
(1st quarter 1989 prices as a percentage of 1st quarter 1988 prices)

<i>Item</i>	<i>Workers</i>	<i>Agricultural Workers in Collective</i>			<i>Population Totals</i>
		<i>Farms</i>	<i>Intellectuals</i>	<i>Others</i>	
Food	113.8	114.2	114.3	113.9	113.8
Beverages	110.9	110.5	109.9	110.2	110.3
Cloth	119.0	119.4	119.5	118.9	119.4
Heating, households, energy use	100.8	101.1	100.5	100.5	100.8
Durable goods	114.8	115.5	116.4	115.8	115.1
Other consumer goods	119.9	119.2	119.7	120.2	120.4
Services	113.8	113.1	114.5	114.3	113.9
Total	114.1	113.8	115.0	114.4	114.2

Source: "Ár, piac, verseny" (Price, market, competition) *OÁH*, 1989, no. 1, p. 11; reprinted in Ábel (1990, p. 33).

Table 8-4. Agricultural Subsidies as a Share of GDP, 1988
(figures as in percentage of respective country's 1988 GDP)

<i>Country</i>	<i>Total</i>	<i>Description</i>
Hungary	4.01	1.71 for current production subsidies (see definition in the note following table 8-1); 0.84 for market intervention; 1.09 for tax refunds; 0.37 for consumer milk subsidies.
Poland	5.8	4.8 for food production; 0.9 for fodder, fertilizer, tractors and pesticides; 0.1 for agricultural credit.
Czechoslovakia	6.27	This figure does not include extrabudgetary agricultural support.
Soviet Union	11.62	6.54 for food production; 3.09 for support of farms with poor-quality land; 0.23 for fodder, seeds, fish meal, tractors and fertilizers; 1.76 for the extrabudgetary agricultural price support fund used to subsidize production of essential commodities.

Source: Table 2 and *SE* 1989, p. 54; World Bank 1990, p. 32; Charap and Gronicki 1990, p. 2; Houston Summit 1991, volume 1, pp. 268, 290, 291.

Table 8-5. Simulated Changes in Consumer Prices, the Money Supply and Real Wealth in Czechoslovakia, 1990-94
(percentage changes from the previous year)

<i>Scenario/Factor</i>	<i>1990</i>	<i>1991</i>	<i>1992</i>	<i>1993</i>	<i>1994</i>
A. Baseline					
Consumer prices	8.3	8.3	9.2	7.7	8.9
Money supply	2.5	5.2	8.7	9.9	12.9
Real Wealth	-6.0	-4.1	-3.8	-0.9	-1.0
B. Scenario 1					
Consumer prices	8.3	8.5	8.9	7.3	8.0
Money supply	2.5	0.2	0.7	3.0	7.6
Real Wealth	-6.0	-7.7	-6.4	-3.0	-2.0
C. Scenario 2					
Consumer prices	8.3	8.4	9.2	7.6	8.6
Money supply	2.5	1.3	7.6	14.4	19.4
Real Wealth	-6.0	-4.1	-1.3	3.9	6.2

Source: Charap and Gronicki 1990, pp. 22-27.

Charap and Gronicki's baseline estimate (table 8-5) is based on the following assumptions:

- ▶ state control of the economy, with excess demand eliminated in 1991 (the state increases prices for consumers and producers by reducing subsidies on foodstuffs and nonmaterial services and increasing taxes on other goods and services);
- ▶ full employment;
- ▶ gross indebtedness is held constant at \$7 billion US;
- ▶ declining military expenditures;
- ▶ decline in subsidies on foodstuffs and nonmaterial services, and excise taxes on "other goods and services" in real terms, but growth at 2.5–3.0 percent in nominal terms;
- ▶ gradual devaluation of the official exchange rate. The first scenario assumes that subsidies of foodstuffs and nonmaterial services are completely eliminated in 1991, as are excise taxes on "other goods and services." The second scenario adds a money-financed expansionary monetary policy to move the economy closer to its potential output (Charap and Gronicki 1990, pp. 17-18).

The simulation results in table 8-5 indicate that under the old regime noninflationary monetary policy and gradual price reform (baseline) create annual increases in consumer prices of 8–9 percent and a steady but declining decrease in the population's real wealth. Also, more restrictive monetary policy and more dramatic price reform than in the baseline (scenario 1) create annual increases in consumer prices similar to those found in the baseline, but at a cost of a steeper decline in the population's real wealth. Expansionary monetary policy, however, coupled with dramatic price reform (scenario 2) create annual increases in consumer prices similar to the previous scenarios and a much less steep decline in the population's real wealth.

The lesson of Charap and Gronicki's analysis is straightforward: under the old regime price reform would be possible under sensibly expansionary monetary policy. Inflation could be kept under control and the population could benefit from the rationalization of prices within a relatively short period of time.

POLICIES FOR REDUCING AGRICULTURAL PRICE DISTORTIONS

One might think that the post-1988 correlations between the reduction of agricultural price distortions and inflation would be similar to earlier Hungarian experience with gradual rationalization or the simulation results of the Charap-Gronicki econometric model. This has not been true for most of the post-1988 period. Two reasons stand out. First, Eastern Europe and the Soviet Union have been subjected since 1988 to three types of destabilization—ethnic

unrest, uncertainty over property rights, and the disintegration of the CMEA. Second, East Europeans and Soviets have developed over the past few years a keen desire to be part of the international economy. This means that today's expectations—the transformation to a full-fledged market—are much higher than yesterday's.

The transformation to a market economy requires the implementation of a sequence of interrelated sets of policies. Only four of the many dimensions of a strategy are discussed here. Each of these dimensions is related to the reduction of agricultural price distortions in Hungary, Czechoslovakia, Poland, and the Soviet Union.

In the post-1988 era, the reduction of agricultural price distortions in these four countries has not been correlated with inflation in a simple way, partly because so many aspects of economic life have been altered at the same time. Rather, inflation has been closely connected to one of two ways governments have chosen to compensate their people for expected increases in all forms of prices while reducing real wages in the state sector—less-than-full wage indexation and a tax-based incomes policy. This latter policy simply imposes prohibitive taxes on wage increases above a predetermined formula (which in principle always yields a wage gain less than expected inflation). If reductions of agricultural price distortions contribute to general price increases that are above the expected level, then such reductions would fuel future inflationary expectations and encourage labor to demand either a higher level of wage indexation or a more liberal tax-based incomes policy. This in turn could result in higher inflation in the future.

Table 8-6 lists policy options under each of four dimensions: price and subsidy alternatives, inflation and agricultural credit strategies, ways of regulating food processors and the suppliers of agricultural inputs, and compensation for higher food prices.

Hungary, while gradually rationalizing agriculture, was characterized by the combination of administrative price increases, low inflation and interest rates, no privatization, regulation of state-sector monopolies, and permanent wage supplements (A3, B2, C4, D2). With this strategy Hungarian consumer price increases stayed below 10 percent through 1987 (1988 inflation of 15.8 percent is difficult to evaluate because Hungary introduced personal income taxes and a value-added tax in that year).⁸ Hungary's 1990 policies differed from most of its earlier strategy and consisted of almost full agricultural price liberalization, high inflation and low interest rates, no privatization, regulation of state-sector monopolies, and a tax-based incomes policy (A2, B4, C4, D1), and resulted in an inflation rate of 28.9 percent. In 1991, Hungarian policy became more market-oriented with full agricultural price liberalization, some privatization, and some trade liberalization (A1, B4, C3-C4, D1). The expected 1991 increase in the consumer price index is 38 percent.

Casual observation suggests that the permanent wage supplements under the pre-1989 regime were much less inflationary than the 1990–91 tax-based incomes policy.⁹ There are two

⁸ The pre-1991 inflation figures quoted for Hungary, Czechoslovakia, Poland, and the Soviet Union come from national statistics, while the figures for 1991 expected inflation are based on the author's estimates made by utilizing information from national sources, PlanEcon, and recent developments in each country.

⁹ Hungary has used a tax-based incomes policy for several decades, but before 1989 increases in regulated consumer prices were generally offset by wage supplements.

reasons to favor the use of wage supplements. First, wage supplements are calculated to offset the increase in food expenditures of an average state-sector employee due to the projected food price increases. They are not designed to compensate for other sources of inflation such as currency devaluation or inflationary monetary policy caused by budget deficits. Policymakers may be more cautious about accommodating inflation when there is no automatic compensation scheme in existence. Second, the uniform character of wage supplements means they are more beneficial to the poor than to the rich. Wage supplements may be less inflationary than tax-based incomes policy because they have fewer built-in escalators.

One must be cautious about comparing pre-1988 inflation rates with those of 1990 and 1991, precisely because there has been more price liberalization in 1990 and 1991 than earlier, and not all movement in prices after liberalization is inflation; some is a one-time adjustment in price levels. In addition, the magnitude of compensatory wage supplements can be reliably estimated when administrative price increases are being considered, but much less so when a wide array of prices are being freed within a monopolistic industrial structure. Nonetheless, there are indicators that Hungarian fiscal, monetary, regulatory, and incomes policies have not been firmly anti-inflationary, since the process of price increase has accelerated. More concretely, actual price increases exceeded anticipated price increases accompanying liberalization of regulated prices and exchange-rate devaluation.¹⁰

Czechoslovakia's 1990 policy was more conservative than Hungary's and consisted of administrative price increases, low inflation and low interest rates, no privatization, regulation of state-sector monopolies, and permanent wage supplements (A3, B2, C4, D2). It resulted in an inflation rate of 11 percent. Czechoslovakia's 1991 behavior (A2, B4, C3-C4, D1) has been close to Hungary's behavior with an expected inflation of 50 to 60 percent. Again the pattern seen in the Hungarian case has been repeated—lower inflation coincided with increases in administered prices and compensatory wage supplements, while higher inflation coincided with freeing prices and a tax-based incomes policy.

Poland's 1990 behavior can best be approximated as almost full price liberalization, a high rate of inflation and low interest rates, some privatization and trade liberalization, and wage indexation (A2, B4, C3-C4, D1). It resulted in 220 percent inflation (down from 640 percent in 1989). Poland's 1991 behavior (A1, B4, C3-C4, D1) has moved in the direction of full agricultural price liberalization with inflation expected to be about 90 percent. Poland, in contrast to Hungary and Czechoslovakia, has utilized wage indexation rather than a tax-based incomes policy.

The Soviet Union's 1991 policy of administered price increases, high inflation and low interest rates, no privatization, regulation of state-sector monopolies, and cash allowances (A3, B4, C4, D2) was more backward than any of the other countries. Note that Soviet authorities left state-sector prices of food virtually untouched in 1990. Therefore the unusually high level of inflation in 1990 (official plus hidden) was not caused by increases in food prices, but rather by decreased availability of food at state-sector prices and inflationary pressure fueled by budget

¹⁰ In 1990, the initial target for wage increases was 15 percent, given an inflation target of 19 percent. Wages in industry actually increased by 24 percent and inflation reached 29 percent. Thus, the intended real wage cut was achieved, but at a higher level of inflation.

Table 8-6. Policies Associated with the Reduction of Agricultural Price Distortions

A.	<i>Prices and Subsidies</i>	<ol style="list-style-type: none"> 1. full agricultural price liberalization, and no subsidization of food 2. almost full agricultural price liberalization, and subsidization of basic food (items occupying a large share in the diet of the poor and that generally have low income elasticities) 3. administered increases in the prices of agricultural inputs, agricultural outputs, and processed food
B.	<i>Inflation and Agricultural Credit</i>	<ol style="list-style-type: none"> 1. low rate of inflation and market-determined interest rates 2. low rate of inflation and administratively-determined low interest rates for farmers 3. high rate of inflation and market-determined interest rates 4. high rate of inflation and administratively-determined low interest rates for farmers
C.	<i>Regulatory Strategies: Suppliers of Agricultural Inputs and Food Processors</i>	<ol style="list-style-type: none"> 1. privatization and the breaking up of monopolies 2. privatization and the regulation of privately-owned monopolies 3. privatization and trade liberalization 4. no privatization and regulation of state-sector monopolies
D.	<i>Compensation for Higher Food Prices</i>	<ol style="list-style-type: none"> 1. wage indexation or a tax-based incomes policy for those working in the state sector 2. permanent wage supplements to those working in the state sector 3. targeted assistance programs such as food stamps 4. no compensation because there has been little or no change in food prices

Source: Author.

deficits, which in turn grew because of a rise in food subsidies.

There have been common themes among these four countries: liberalization of food prices, compensation for price increases, and the continued availability of subsidized agricultural credit. The demands of the budget during the transition make previous levels of food subsidies impossible to maintain. The population's already low standard of living and the government's well-founded fear of social unrest have made compensation a necessary component of agricultural reform. When compensation, however, brings high inflation the benefits that the agricultural transition offers producers are diluted. Although producers gain by holding land, in an inflationary environment they lose as higher interest rates reduce the return on their capital-intensive agriculture.

RECENT EXPERIENCE

Each of the countries discussed above has to date experienced only modest supply responses to its policy and structural changes. This should not be surprising since the period

of observation is very short and ambiguities regarding property rights, employee incentives, and regulation abound. Moreover, Hungary, Czechoslovakia, and Poland have experienced sharp declines in aggregate demand and capital availability.

Czechoslovakia may be the country best prepared to reduce its agricultural price distortions because it has a pre-1990 history of balanced government budgets, tight money policy, and low inflation. It began to rationalize agricultural prices in July 1990 when most retail food prices were increased by 25 percent on average, in order to eliminate budgetary subsidies that directly lowered retail prices. Compensation for these price increases took the form of wage supplements to state-sector employees of 140 koruna per month. The cost of this compensation package was designed to equal the savings in budgetary subsidies. As mentioned previously, 1990 Czechoslovakia's inflation was 11 percent, roughly in line with the simulation results of the Charap-Gronicki model.

On January 1, 1991, the country introduced its own version of the "big bang" approach to economic transformation. The primary goal has been to design monetary and fiscal policies to allow a one-time corrective jump in retail prices, but to block any further inflation. This policy has included: a planned government budget surplus of about one percent of GDP; reduction of all budgetary subsidies to represent only 5 percent of GDP; tax reform; a tax-based incomes policy designed to allow nominal wage increases to jump up to 18 percent in light of 30 percent expected inflation; tight monetary policy; and sharp devaluation of the koruna, then pegging it to a basket of five currencies. In addition, structural measures such as clarification of property rights, privatization of retail businesses and services, the widespread granting of foreign-trade rights, and banking decentralization have begun. More ambitious structural issues such as privatization of large state enterprises, land and real estate, enterprise restructuring and commercial bank restructuring are still unresolved.

With respect to food, retail prices were completely liberalized as of January 1, 1991, and rose by about 30 percent by the end of January. However, in February, food prices leveled off and then began to fall as the sharp decrease in aggregate demand forced food retailers to lower their prices.

The initial experience for Czechoslovakia has been encouraging, particularly because direct Czechoslovak food subsidies were eliminated in 1990 and the 1991 anti-inflationary policy has been working as expected.

In January 1990, the Hungarian government initiated an almost full liberalization of agricultural prices. An official announcement in February 1990 outlined the impact this liberalization was expected to have during 1990. In table 8-7, anticipated price movements for all of 1990 are compared to actual movements for 1990 (both are shown as percentage change relative to the same period one year earlier). In addition, drastic cuts in farm-specific operational subsidies, investment subsidies, and export subsidies were implemented along with numerous tax changes (AKF 1990, pp. 4-7).

On January 1, 1990, Poland introduced the most far-reaching transformation program seen in Eastern Europe, consisting primarily of the following economic stabilization measures: a balanced fiscal budget, tight credit ceilings, and a restrictive tax-based incomes policy in state enterprises that implied a sharp and continuous drop in real wages; market-clearing price formation; removal of bureaucratic restrictions on the private sector; and internal convertibility

Table 8-7. Hungary: Selected Agricultural and Food Price Increases, 1990
(percent change relative to the same period in 1989)

<i>Item</i>	<i>Anticipated 1990 Increase</i>	<i>Actual 1990 Increase</i>
Agricultural producer prices	22-23	31.6
Producer prices in food processing	24-25	28.4
Retail consumer price for basic food	30	36.6
Other foodstuffs	22	32.0
All food	25	34.7
Industrial inputs into		
Agricultural:		
Fertilizer	50	—
Energy	27	—
Transportation	30	—
Protein	17-20	—
Packaging	10-20	—

— Not available.

Source: AKF 1990, p. 2; SHK 1991, no. 1, pp. 28, 29, 21.

of the zloty, following a sharp devaluation at the end of 1989 and a fixed exchange rate vis-à-vis the US dollar.

Given the simultaneity and number of changes, with the available data it is impossible to attribute causality. Nonetheless, during 1990:

- ▶ Retail prices of foodstuffs increased from (December 1989 to December 1990 (eleven months) by 217.3 percent; nonfoodstuffs by 267.9 percent; all consumer goods by 249.3 percent; and consumer services by 435.5 percent. Thus food prices increased less than prices of other consumer goods and services.
- ▶ Retail prices of individual food groups showed a great deal of variability from December 1989 to December 1990 (eleven months): bread up 292.9 percent; flour up 226.0 percent; macaroni up 660.0 percent; vegetables up 123.8 percent; frozen vegetables up 179.3 percent; apples up 260.9 percent; tropical fruit up 77.5 percent; fresh pork up 224.1 percent; fresh beef up 234.4; fresh veal up 155.2 percent; poultry up 199.5 percent; sausage up 186.0 percent; fish up 253.0 percent; milk and milk products up 232.6 percent; sugar up 113.0 percent; tea up 608.4 percent; coffee up 31.1 percent; and alcoholic beverages in socialized retail trade up 101.5 percent. This variability suggests that Poland's elimination of food

subsidies, commitment to market-determined prices, and trade liberalization have produced significantly different relative prices in a short amount of time.

- ▶ Those workers that retained jobs in the socialized sphere experienced sharp decreases in the purchasing power of their wages and salaries. Given consumer price increases of 249.3 percent from December 1989 to December 1990 (eleven months), total monthly wages in socialized industry increased by 131.0 percent; construction by 157.7; transportation by 154.1 percent; communications by 127.2 percent; trade by 170.2 percent; and all socialized sectors by 141.8 percent. Therefore, on average for the socialized sphere, real wages declined by 30.8 percent. During the same period, the ratio of the unemployed to those employed in the national economy (excluding private agriculture) as of December 31, 1989 grew from almost zero to 8.3 percent.

This description of real-wage declines and unemployment may paint too bleak a picture of the Polish transformation process because nominal wages rose faster than inflation near the end of 1989, and because the most dynamic aspect of the transformation, private-sector activity, is not included in these figures. Per capita consumption of food may provide a more realistic measure of how the transformation has affected people. Per capita consumption figures for employees' households for October 1990 relative to October 1989 are almost unchanged for flour, groats, vegetables, and meat; are higher for bread (+8.3 percent), fruit (+5.2 percent), meat products (+15.6 percent), butter (+22.7 percent), and sugar (+28.5 percent); are lower for fish (-14.6 percent), milk (-6.1 percent), cheese (-4.8 percent) and eggs (-7.4 percent). Per capita comparisons for retired people and pensioners' households show similar results. In addition, the distribution of per capita expenditures of employees' households has changed. Comparing the distribution of these per capita expenditures for third quarter 1990 to that of third quarter 1989, we find that employees spent 50.4 percent of after-tax household income on food in 1990 versus 47.7 percent in 1989; 9.9 percent on clothing and footwear versus 17.0 percent; 9.2 percent on lodging versus 9.9 percent; 3.6 percent on fuel and energy versus 1.8 percent; 3.3 percent on hygiene and health care versus 2.7 percent; 11.2 percent on culture, education, sports and recreation versus 9.1 percent; and 6.7 percent on transport and communication versus 6.4 percent. Similar results hold for the distribution of per capita expenditures of retired people and pensioners' households. Hence, the standard of living seems to have decreased less sharply than the decline in real wages of the socialized sphere. In addition, the population has quickly changed its consumption behavior in response to changes in income and relative prices (SIESP 1991, pp. 44, 53–57, 63–67, 69, 70).

CONCLUSIONS

Nineteen eighty-nine serves as a convenient demarcation for policies designed to reduce agricultural price distortions. The pre-1989 policies have been described in this paper as gradual responses to the need to rationalize the traditional socialist agricultural system with respect to

many factors. Hungary and China, citing inefficiency and budgetary burdens as the main reasons for rationalizing agriculture, were cautiously creative in fostering cooperative and quasi-private ownership, encouraging farms to engage in nontraditional activities, decentralizing decisionmaking authority, and introducing more rational prices. These gradualist policies produced relatively positive results during their time, but are inadequate responses to the more urgent need for transformation, now and in the future.

Nonetheless, gradual rationalization has usually been accompanied by an acceptable rate of inflation (Hungary before 1988, the results of the Charap-Gronicki model, Czechoslovakia in 1990). Several factors contributed to this outcome. First, compensation to the population for increases in retail good prices tended to be in the form of modest, permanent wage supplements that have been less inflationary than wage indexation or tax-based incomes policy. Second, compensation to farmers for reducing subsidies, for tightening credits, or for eliminating special agricultural tax loopholes tended to be in the form of measures such as property rights reform that improved incentives, decreased bureaucratic interference, and permitted farms to engage in new activities. Thus, these measures improved the supply side of the rural economy.

By 1991, Hungary, Poland, and Czechoslovakia had embraced either full or almost full price liberalization. Only the Soviet Union maintained the administrative strategy of raising regulated prices. All four countries have approached 1991 expecting high rates of inflation, with Poland's rate on the decline, and rates of the other countries on the rise. The threat of inflation in the USSR is greatest because the country has not been able to gain control over central government budgetary expenditures. In all four countries, agriculture has received sizeable amounts of preferential credit. Strategies to regulate food processors and suppliers of agricultural inputs have relied on low levels of privatization and import competition rather than on enforcement of existing laws and new antitrust legislation. In addition, all countries have accepted the need to compensate the population for the rise in retail food prices. Hungary and Czechoslovakia have chosen to compensate via tax-based incomes policies, Poland via wage indexation, and the Soviet Union via wage supplements followed by renegotiated wage contracts.

While no country has eradicated inflation, it makes little sense to blame only reform of regulated prices for creating an inflationary spiral. Both in pre-1989 and post-1989 periods, the inability to impose financial discipline on state- or cooperative-sector enterprises and farms and the reluctance to restructure enterprises, farms and commercial banks have fostered multidimensional pressure to inflate the economy that central authorities have not been able to resist. In Hungary, Poland, and Czechoslovakia consumers have benefited from greater availability and a better assortment of food. Finally, there is a strongly held expectation that the elimination of price distortions will eventually result in greater efficiency and lower food prices.

REFERENCES

- Ábel, István. 1990. "Subsidy Reduction in the Hungarian Economy." *European Economy: Economic Transformation in Hungary and Poland*, no. 43, Brussels: Commission of the European Communities, pp. 21-34.

- AKF.** 1990. "Az Agrártermelés 1990. Évi Közgazdasági Feltételei." *Magyar Mezőgazdaság* 1–8, January, melléklet (appendix).
- Charap, Joshua and Gronicki, Mirosław. 1990. "An Econometric Model of Czechoslovakia with Implications for Subsidy Reductions." Working Paper, Department of Economics, University of Pennsylvania, Philadelphia, Penn.
- Houston Summit. 1991. *A Study of the Soviet Economy* by the IMF, World Bank, OECD, EBRD. Paris: OECD.
- KSE.** Annual volumes. *Külkereskedelmi Statisztikai Évkönyv*. Budapest: Központi Statisztikai Hivatal.
- Marrese, Michael. 1983. "Agricultural Policy and Performance in Hungary." *Journal of Comparative Economics* 7(3), pp. 329–345.
- Marrese, Michael. 1986. "Hungarian Agriculture: Moving in the Right Direction." In *East European Economies: Slow Growth in the 1980s*. Vol. 3. Joint Economic Committee Congress of the United States. Washington, D.C.: Government Printing Office.
- MSE.** Annual volumes *Mezőgazdasági Statisztikai Évkönyv*. Budapest: Központi Statisztikai Hivatal.
- PFH.** 1987. "The Hungarian State Budget in the Eighties." *Public Finance in Hungary*, no. 35. Budapest: Ministry of Finance.
- _____. 1988. "State Budget 1988." *Public Finance in Hungary*, no. 41. Budapest: Ministry of Finance.
- PlanEcon Report. Various issues. Washington, D.C.: PlanEcon, Inc.
- Rabushka, Alvin. 1987. *The New China*. Boulder, Colo.: Westview Press.
- SE.** Annual volumes. *Statisztikai Évkönyv*. Budapest: Központi Statisztikai Hivatal.
- SHK.** 1991. *Statisztikai Havi Közlemények*, no. 1. Budapest: Központi Statisztikai Hivatal.
- SIESP.** 1991. *Statistical Information on the Economic Situation of Poland*, January. Warsaw: Central Statistical Office.
- World Bank. 1990. *An Agricultural Strategy for Poland*. Report of the Polish, European Community, and World Bank Task Force. Washington, D.C.

AGRICULTURAL CAPITAL MARKETS

*Charles W. Calomiris**

Prior to the current reforms in Central and Eastern Europe, farmers financed investment through government-controlled central bank lending, typically subsidized with negative real interest rates. As many critics have emphasized, allocations of credit were not based on merit, and were often a means of subsidizing unsuccessful enterprises (McKinnon 1990a; Blejer and Sagari 1991). As planning gives way to decentralized market allocations, and both farming and capital markets become privatized, farmers will rely increasingly on private, decentralized means of finance. Rationalizing the allocation of capital in these economies will be a major source of improvement in well-being, but capital markets in agriculture also present some special problems. Among these are constraints arising from capital market "imperfections" that limit the funding of desirable productive opportunities. Without the creation of viable financial intermediaries and the establishment of creditworthy borrowers through the creation of secure property rights to land, many productive opportunities may even fail to materialize. Financial constraints in agriculture may bias private investment toward other parts of the economy.

The three central issues addressed in this paper are: how capital market imperfections affect private investment allocations; why agriculture is likely to be especially vulnerable to these imperfections; and what sorts of government policies might mitigate the consequences of capital market misallocations. The concept of asymmetric information applied to capital market imperfections and the historical record of agriculture in market economies form the bases of analysis.

CAPITAL MARKET IMPERFECTIONS AND ASYMMETRIC INFORMATION

Recent theoretical models that relax the assumption of common information have helped to sharpen our understanding of capital market imperfections in determining investment behavior and in creating financial intermediaries. An essential point of much of the literature on asymmetric information is that projects that should be funded may not receive the funding they deserve because of information problems. Information problems include not being able to identify the right firm in which to invest or lend *ex ante* and not being able to verify costlessly the actions of the firm or its production outcomes *ex post* when there is incentive for the firm to deceive the investor or lender. In such environments, some bad firms may receive financing while good firms do not, effort will not be supplied optimally, and loans generally will be

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mispriced and rationed (Jaffee and Russell 1976; Leland and Pyle 1977; Stiglitz and Weiss 1981; Myers and Majluf 1984; Greenwald, Stiglitz and Weiss 1984; Gale and Hellwig 1985; Williamson 1986; DeMeza and Webb 1987; Bernanke and Gertler 1990; Calomiris and Hubbard 1990; and a review in Gertler 1988).

A second essential point in this literature is the importance of a borrower's wealth in determining his level of investment: firms with larger endowments will be better able to finance worthwhile projects. In full information models the allocation of investment funds is independent of the distribution of wealth. Under asymmetric information, by placing their own wealth at risk firms both increase the confidence of outside lenders in their abilities and effort (and hence lower the costs of external finance), and reduce the proportion of financing required from relatively costly external finance. Shocks to firms' endowments have important allocative effects. This mechanism underlies the allocative effects of debt deflations emphasized by Fisher 1933; Bernanke 1983; and Calomiris and Hubbard 1989 in macroeconomic studies.

There is a substantial body of microeconomic evidence supporting the proposition that external finance is relatively costly, and that hence changes in internal finance can have allocative effects for investment. Butters and Lintner (1945); and Meyer and Kuh (1957) were early proponents of this view, particularly as applied to small, growing enterprises. Recent cross-sectional and panel studies by Tybout (1983); Fazzari, Hubbard and Petersen (1986); Hoshi, Kashyap and Scharfstein (1991); Devereux and Schiantarelli (1990); and Calomiris and Hubbard (1991) have found large effects from cash flow on investment attributable to capital market imperfections in a variety of countries and periods. These studies link cross-sectional differences in the costs of external finance and the cash flow sensitivity of investment.

CONTRACTING AND INTERMEDIARIES UNDER ASYMMETRIC INFORMATION

The new theoretical literature on credit market imperfections has implications for the form financial arrangements take. In the world of full information, fully state-contingent Arrow-Debreu securities characterize contractual relationships. Under asymmetric information, some more limited forms of financial contracting may be desirable, either because they affect the incentives of the borrower (for example, reduce the gain from pursuing a high-risk strategy), or because they help to economize on the lender's costs of monitoring. For example, simple debt contracts may be beneficial by reducing the number of states in which the lender must verify the firm's profit (Townsend 1979; Diamond 1984; Gale and Hellwig 1985; Williamson 1986; and Lacker 1991), or because they reduce problems of adverse selection (Myers and Majluf 1984; DeMeza and Webb 1987).

There is also a role for financial intermediaries in relaxing some of the constraints on borrowing brought about by asymmetric information. Banks economize on information costs in a variety of ways. They may have superior information for identifying firm characteristics (Campbell and Kracaw 1980; Boyd and Prescott 1984); they may have lower costs of monitoring outcomes (Diamond 1984; Williamson 1986); they may have a comparative advantage in enforcing information sharing arrangements within a group (Ramakrishnan and Thakor 1984; Beneveniste and Spindt 1989; Calomiris and Kahn 1991; Calomiris, Kahn and Krasa 1991).

An interesting feature of the asymmetric-information world compared with the world imagined by the Arrow-Debreu model is its relative fragility. The allocation of capital and

consumption are both more vulnerable to disturbances. In a world where debt contracts dominate, where banks originate and hold loans, and where substantial proportions of internal finance are required, it will be much harder to diversify. The reliance on debt makes it possible to have costly financial crises involving many bankruptcies. Furthermore, investors and savers will not be able to diversify fully, for four reasons: (a) Borrowers who issue debt absorb a disproportionate share of project risk; (b) Incentive compatibility limits the potential for loan resales by banks. That is, banks must hold their own loans, since "lemons" premiums are often prohibitive (Akerlof 1970); (c) For the same reason, depositors in banks without a wide-branching network must hold claims backed by locally created assets; and (d) Requiring managers to own substantial stakes in their own investments limits their ability to diversify.

In addition to lack of borrower diversification and associated problems, there are costs associated with regulatory barriers to, or the risk of failure of, financial intermediaries.¹

The work on investment, banking, and contract structure under asymmetric information provides a unified framework for understanding observed choices of costly contractual and institutional structures, lack of diversification, and under-investment that would be hard to understand in the absence of such imperfections. These various theoretical and empirical strands of the asymmetric-information approach to financial markets have a common message: financial relations are not merely epiphenomenal. The level and composition of wealth of borrowers, the particular forms of financial contracts, and the activities of financial intermediaries all affect the process of allocating capital. A central mission of economic policymakers is to provide an atmosphere in which the proper contracts and institutions can thrive.

This literature emphasizes the impact of the distribution of wealth on the allocation of investment. Furthermore, it highlights the handicap that the agricultural sectors in Central and Eastern Europe and the Soviet Union face at the outset of the transition. In these economies internal finance (net worth) has been limited by prohibitions on property, and property is now owned by economic agents who may not be the appropriate investors in the future. Financial intermediaries have little information about the new agents, and the informational problems that characterize mature agricultural financial markets will be especially acute in the early transition.

THE PECULIAR VULNERABILITY OF AGRICULTURE

Beginning with Akerlof (1970), economists have recognized that asymmetric-information considerations are likely to be especially relevant in the agricultural sector, especially in developing economies. Akerlof (1970, pp. 498–99) focuses on evidence of much higher interest rates charged in agricultural areas of India relative to cities. He follows several other authors in stressing the role of personal contacts in the provision of agricultural credit. Only those who are well acquainted with the local borrowers are able to compete effectively in the lending market. This forces agricultural investors to rely on local sources of capital, which are often

¹ The importance of banks in providing superior allocations of funds has motivated studies that examine the effect of bank failures on economic activity (Bernanke 1983; Calomiris, Hubbard, and Stock 1986) and the adverse effects of restrictive bank regulation on the efficient allocation of capital (McKinnon 1973; Shaw 1973; Fry 1988; McKinnon 1990b). Related to these studies are other empirical and theoretical studies of factors influencing the fragility of banks, such as restrictions on branching, and the proper role of government regulation in preventing destabilizing banking crises (for example, Calomiris 1989; Calomiris 1990; Calomiris forthcoming).

extremely limited. Under these circumstances a low initial endowment of wealth in a region has a lasting effect on wealth accumulation. Akerlof argues that scarcity of credit, due to asymmetric information, has been a major source of landlessness in India and elsewhere. Important contributions to the early literature on asymmetric information and credit rationing (for example, Braverman and Stiglitz 1982) examined the consequences of "debt peonage" in underdeveloped agricultural communities, in which local moneylenders take advantage of the lack of competition in rural credit markets.

Implicit in the analysis of credit scarcity and consequent monopoly rent extraction by wealthy landowners is a presumed failure of financial intermediaries to form in developing rural areas. Here again there are reasons to expect agricultural areas to be especially weak. Setting up a bank entails substantial fixed costs—capital, employees' salaries, general information gathering—and the more sparsely populated the area, the larger the fixed costs per loan for the prospective bank entrant. Moreover, banks that organize in towns or cities can finance a wide variety of enterprises, while agricultural banks are forced to specialize in undiversified portfolios of loans, which make them extremely vulnerable to adverse price and weather disturbances.

Branch banking can substantially alleviate both of these problems. Branches have lower overhead, and thus are less expensive to operate. By pooling resources, branches can diversify across different activities and locations. These advantages explain why branch banks historically have shown higher incidence of entry into peripheral areas than unit banks, and why branch banks enjoy higher survival rates during periods of adverse shocks (Calomiris 1989, forthcoming; Calomiris 1990; Calomiris, Hubbard, and Stock 1986; Calomiris and Schweikart 1988 and forthcoming; Evanoff 1988).

Geographical isolation and prohibitions on branch banking are not the only problems that restrict entry of banks in agricultural areas and hamper the allocation of capital. More fundamentally, it is intrinsically difficult for agricultural producers to establish and maintain "creditworthiness." This follows from two problems they face. First, agricultural production requires large amounts of advance credit, with a long delay in repayment due to the gestation period for growing and marketing farm produce. Second, agricultural entrepreneurs hold their wealth in the form of risky farmland. During the wealth accumulation process, farmers find it exceedingly difficult to diversify. Sometimes this is due to an absence of diversified investments in agricultural areas. The main constraint on diversification, however, is the fact that farmers find it advantageous to own their wealth in the form of the land they cultivate. Recall that under asymmetric information lenders will have an incentive to force firms to finance internally insofar as they are able to do so (Leland and Pyle 1977). In agriculture this means farmers must own their own land, the value of which depends on highly variable prices for its produce.

Farmers, of course, should want to diversify even more than the typical economic agent, because their ability to invest and the possibility of future wealth accumulation hinge on continuing access to credit, which in turn requires them to maintain their wealth. But the benefits seem to outweigh the cost of diversification. It is an unfortunate irony that some of the riskiest assets in the economy are held as the sole form of wealth by some of the most risk-averse investors. Risk-averse farmers may even choose not to diversify their crop mix in order to gamble on reaching a threshold of income. An extreme case was the postbellum American South, in which the specialization in cotton, while extremely risky, offered the farmer the best chance of remaining in farming (Wright 1986).

Banks will take account of the extent and riskiness of borrowers' collateral when deciding whether to enter new locales, or to make new loans. Banks will, therefore, place relatively more stringent limits on agricultural borrowers' leverage, charge higher interest rates, and generally be more reluctant to invest in information about new individuals seeking loans, or to enter markets with little pre-existing wealth accumulation (see Binswanger and Rosenzweig 1986).

SECOND-BEST ALTERNATIVES TO FARM OWNERSHIP

The problem of the concentration of risk in agriculture cannot be solved by corporate ownership combined with land rental. It is true that farm rental or sharecropping tenures would eliminate the farmer's risk of declines in land value, but the fact that farmers who *can* own their land almost always choose to do so is *prima facie* evidence for the relative efficiency of land ownership. Theoretical studies of sharecropping, for example, often view sharecropping as a "second-best" alternative to ownership in an environment of asymmetric information (see Otsuka and Hayami 1988; Singh 1989). These models stress principal-agent problems (which could include costly verification of effort, output, or land conservation) that make rental or sharecropping arrangements suboptimal. The same arguments could be applied toward rental markets for capital (David 1971), which can sometimes limit capital intensity and technological progress.

Empirical studies have found support for the "second-best" explanation of rental and sharecropping arrangements, and the "revealed preference for ownership."²

SYMPTOMS OF AGRICULTURAL "FRAGILITY"

The symptoms of agricultural capital market constraints are many and familiar. The wealth (and land) distribution among farmers is especially skewed, and wealth distribution is closely related to the agricultural ladder of tenancy. Farm size distribution often seems to reflect the fact that deep pockets allow big farmers (who are better diversified, and have better links to sources of finance) to grow relatively faster, particularly during periods of low cash flow. For example, many farms in the U.S. are much larger than the minimum efficient scale of production, and the rapid growth in average farm size is mainly attributable to growth of the largest farms (Krause and Kyle 1970; Garcia, Sonka, and Yoo 1982; Calomiris, Hubbard and Stock 1986; Hall and Le Veen 1978). Real growth (measured in sales per farm) of the top tenth percentile of U.S. farms was 46 percent from 1975 to 1984, compared to 26 percent for the median farm (Calomiris, Hubbard, and Stock 1986).

² Brandt's (1990) logit study of land tenure choice in rural China during the 1930s confirms the role of physical and human capital in determining whether rental or ownership arrangements occurred. David (1971) ascribes the delay in the adoption of the mechanical reaper to the difficulty of sharing capital among many small farmers on the Northern American frontier in the 1850s. Bharadwaj's (1974, chapter 6) study of Indian agriculture echoes Wright's (1978; 1986) argument that crop mix in the American South varied substantially with tenure. In India, on average, owner-occupied farms appear to have a less constrained choice of crops, often produce a more diversified bundle of goods, and invest more in irrigation. Shaban (1987) finds substantially higher output per acre, and greater input intensity, for owned farms relative to sharecropped farms in India.

Because farmers are unable to diversify, agricultural price declines pose substantial threats to farm operators' solvency, which periodically result in the impoverishment of the "lower tail" of the income distribution. In the 1920s, for example, seven particularly hard-hit states saw farm bankruptcy rates in excess of five percent per year (Calomiris forthcoming, table 3).

Levels of farm investment show excess sensitivity to income shocks, and are vulnerable to reductions in the supply of credit from local intermediaries. Consistent with the asymmetric-information approach, investment during periods of high cash flow and land-value appreciation follows the predictions of the simple neoclassical model, while during episodes of reduced cash flow and land values—presumably when credit is most needed and most difficult to obtain—investment falls far short of the levels implied by a dynamic neoclassical model (Hubbard and Kashyap 1990). Land values decrease, debt-servicing burdens rise, and local bank failures reduce farm output and investment through their impact on financing costs (Calomiris, Hubbard, and Stock 1986).

Finally, in an environment where credit is scarce, the importance of preserving wealth and maintaining cash flow (and thereby also securing credit) distorts the farmer's intertemporal allocation of nonrenewable resources. Liquidity-constrained farmers, who discount the future at unusually high interest rates, will be less likely to produce in ways that preserve long-run viability of soil and water resources at the expense of short-run profits. The rapid depletion of water and soil resources in the United States has attracted much attention (Jackson, Berry and Coleman 1984; Pimentel and others 1975). Several authors have noted a possible link between liquidity constraints and poor conservation practices. Woodruff (1937) argued that conservation was the first casualty of credit constraints. In a microeconomic analysis of farm conservation behavior, Lee (1980) found evidence that large farms or farms with significant uncommitted cash flows were more active than others in soil conservation practices.

Agriculture is particularly prone to capital market "failure" because of the geographic isolation of borrowers (and consequent high costs of information that limit capital inflows); the non-diversifiable risk of the landholding agricultural enterprise; and agency costs associated with land, labor, and capital rental markets that make owner-operators the preferred form of land tenure. These intrinsic difficulties are sometimes augmented by regulatory policies that restrict bank entry and diversification. These factors promote credit scarcity *ex ante*, and make farmers and farm lenders exceptionally vulnerable to disturbances that disrupt credit flows *ex post*. Extreme volatility of income, a chronic scarcity of lenders, quantity rationing and "red-lining" of some locations or wealth classes, skewed income and wealth distributions, an underclass of farmers unable to own their own land, and misuse of nonrenewable resources can all be seen as symptoms of the costs of resolving problems of asymmetric information in agricultural credit markets.

APPROPRIATE POLICY RESPONSES

After hearing the litany of ills produced by free markets in agriculture, some Central and Eastern European and Soviet reformers may wonder about the advantages of privatization. The benefits, of course, come from the incentives that private markets create for lenders to gather information and for producers to allocate resources more efficiently. The challenge

policymakers face is to find a way to reap the advantages of privatization while minimizing the distortions and wealth inequality that arise from capital market imperfections. What can the government do, and what should the government not do, to mitigate problems associated with capital market imperfections?

PROPERTY RIGHTS AND LAND REDISTRIBUTION

Governments should establish clear property rights to land and equipment and predictable taxation policies, and should eschew any temptation to support unprofitable enterprises on the backs of profitable ones as they have in the past. Such "soft" budget constraints have crippled incentives to invest and work in all sectors under central planning (Kornai 1986a; 1986b). Rational profit maximizing requires, as a first step, hard budget constraints (McKinnon 1989; 1990a). Hard budget constraints, in turn, require the *internal* convertibility of the currency. Enterprises must be allowed to spend their profits, and to spend them as they please. Otherwise, as has typically been the case in the past, bureaucrats will use licenses and quantity rationing to accomplish their desired ex post tax and transfer scheme. Implicit subsidies through central bank loans to favored enterprises are likewise taboo. The lack of central bank self-discipline, particularly in the Soviet Union today, has a further disadvantage: excessive monetary growth motivates continuing price controls as the only means for containing a rampant inflation (Shmelev and Popov 1989).

Second, land distribution policy is a crucial component of agricultural reform, not just because of equity considerations. Ensuring proper incentives for working the land, managing its resources, and soliciting credit all require farmers to own a substantial stake in their farms. Land ownership, along with secure property rights, is the most essential prerequisite for progress.

Regardless of the means by which land ownership is distributed, farmers should have full rights to purchase and sell land. Obviously, the current and optimal configurations of farms and distributions of laborers may differ greatly. Land ownership itself, however, can be an important vehicle for financing relocation and reorganization of farming if individuals are given the right to decide the size and location of their farms, and whether they will remain in, or enter, farming. The simplest approach would be to give land to those who currently work it, and depend on private reallocations of land to achieve the most efficient organization of farms. In some countries (notably Hungary) there is opposition to giving land to current cultivators, rather than to those with historical claims to the land. A possible way out of this political stalemate would be a scheme to repay farmers dispossessed of land by granting them government vouchers (essentially currency), which could be used for purchasing land from current cultivators. This would minimize disruptive relocation, and still allow relatively efficient farmers whose land was expropriated a means to resume farming, or at least regain lost wealth. Secondary markets for land would arise and individuals could freely choose whether to keep, sell, buy, or trade land.

Equity-minded governments might be distressed by the potential concentration of land ownership that alienable land permits. The answer is not to limit the right to sell land. This would be counterproductive, not only because it would limit the reorganization of farming and

the distribution of labor, but because it impinges on liquidity-constrained farmers' only source of collateral. Land that cannot be sold is of little value to a lender as collateral.

Neither should equity-minded governments intervene to prevent the satisfaction of claims by creditors. Debt moratoria have a chilling effect on the future supply of credit. The experience of the U.S. in the twentieth century suggests that lenders who could withdraw from agricultural credit markets (insurance companies, in particular) did so in large part because of a perception that bankruptcy laws and debt moratoria weakened their claims to land as security for loans.

PRIVATE INTERMEDIARIES AND THE EFFECTS OF REGULATION

What policies should the government adopt toward private financial intermediaries? Here there is much to be learned from the mistakes of others, especially the U.S. and many developing countries. In many cases, governments desperate for taxes have turned to the reserve tax on banks as the easiest target (forced zero-interest reserve holdings). They, like their counterparts in the East, have also used banks as the primary means of distributing transfers, through special credit quotas and pass-through loan subsidies. These policies often have crippled the banking system's ability to allocate credit to non-favored borrowers, and have reduced the efficiency of capital. The main problem in financially repressed economies is not the level of savings, but the allocation of savings to inefficient uses (Fry 1988; Gelb 1989; McKinnon 1990b). Financial savings are channeled according to political, rather than economic, criteria. This also encourages bureaucratic corruption and wasteful efforts devoted to political "rent-seeking".³

Furthermore, in financially repressed economies, savings often take the form of wasteful hoarding of inputs and products by savers who face negative or very low real rates of return through the regulated banking system. This is a particularly important problem in the Soviet Union today, for two reasons. First, there are few opportunities for financial savings. Second, there is little government credibility regarding monetary policy or property rights over financial assets. In this environment, producers have a strong incentive to save through hoarding. As Aganbegyan (1988) writes:

. . . it will be difficult for us to move away from direct, central allocation of capital goods to a system of wholesale buying and selling. . . . As soon as [enterprises] would be allowed to buy what they please, the acquisitive instinct they have developed . . . would come into play, and they would increase stocks out of all proportion.

Such apprehensions are not simply speculation. A large scale experiment conducted in 1984–86 has shown that as soon as enterprises were given the go-ahead to make special purchases, they bought equipment and material for the 'rainy days' ahead. The value of the stock [inventories] in all our enterprises exceeds 460 billion rubles—almost as much as the State's entire annual budget!

³ See Gelb and others, 1980, for a nice description of the corrupt and inefficient network of government controlled loan programs in Brazil.

Moreover, the stocks are growing twice as fast as production (cited in McKinnon 1990a, pp. 16–17).

Aganbegyan appropriately concludes that "the introduction of wholesale trade is necessary, and must go hand-in-hand with the reform of finance and credit." This underscores the need for government credibility to encourage financial savings.

Aside from the adverse allocative consequences of reserve taxes, pass-through loan subsidies, and loan quotas, other well-meaning regulations have equally disastrous effects on the level of savings, its form, and its allocation. For example, limits on interest rates banks can charge ultimately reduce the demand for deposits, and hence the supply of loans.

Branch banking restrictions (particularly popular in agrarian areas of the U.S.), are intended to reduce the market power of large banks, but in fact have quite the opposite effect. Banking is by nature a local business, and therefore, the definition of the relevant market for a banking office is local. Restrictions on branch banking create many local monopolies of unit banks, protected by the barriers to entry that come from the fixed costs of establishing competing banks in sparsely populated agricultural areas. Unit agricultural banks charge more for loans and pay less on deposits. Their rents in the U.S. are reflected in the market values of their charters, which in the past have been sold at great profit. Unit banks are also much riskier enterprises, as already noted, especially in agricultural areas where opportunities for diversification are limited.

Finally, government should resist the establishment of blanket deposit insurance plans, or the provision of explicit or implicit insurance to banking enterprises. The observation that banks are valuable repositories of information capital does not warrant government schemes to insure banks. The schemes can effect the investment decisions of bankers by encouraging high-risk lending, as the current savings and loan crisis in the U.S. illustrates. Furthermore, unregulated nationwide branch banking can achieve systematic stability (the historic motivation for deposit insurance) without creating the distortions of government deposit insurance (Calomiris 1989, forthcoming; Calomiris 1990; Calomiris and Gorton 1991). The absence of government insurance also makes bank capital and reserve regulations unnecessary, since without insurance, banks will voluntarily finance with an appropriate proportion of capital. In the absence of deposit insurance, bankers will use capital and reserve ratios to attract depositors. Capital ratios in the U.S. prior to the establishment of federal deposit insurance were typically in excess of 10 percent; by the 1970s capital had shrunk to the regulatory requirement of roughly half that amount.

In sum, the best approach for the government to take in regulating financial intermediaries' entry and lending activities is to resist the pressures of special interests and do as little as possible. The government's main role in banking should be to set and enforce appropriate standards for honesty in bank dealings.

OPTIMAL TAX POLICY WITH IMPERFECT CAPITAL MARKETS

If the government is not going to rely on the banking system as its primary means of tax revenue (as so many developing countries have in the past), how should it finance itself, and how can it structure tax policy to minimize distortions in agricultural (and other) credit markets?

Whatever the form of taxation chosen, there are clear advantages to temporarily removing tax burdens from firms during the most severe periods of liquidity constraints. Models of asymmetric information stress that some borrowers may fail to invest because they lack sufficient wealth and cash flow. These constraints are especially relevant in the early stages of an enterprise's "life cycle." Young, growing enterprises rely disproportionately on internally generated funds to finance investment, and are more likely to face severe leverage constraints in gaining outside finance (Butters and Lintner 1945; Calomiris and Hubbard 1990; Calomiris and Hubbard 1991; Myers 1984).

These considerations suggest that young, growing enterprises should be allowed to postpone tax burdens until future periods when their liquidity constraints are less binding. For many of these firms, taxes paid reduce investment in fixed and working capital nearly dollar for dollar (Calomiris and Hubbard 1990; Calomiris and Hubbard 1991). A reliance on consumption taxation would be even better at minimizing investment-saving distortions. Otherwise, progressive income taxation would help, and opportunities for enterprises to postpone taxes (on which they could pay interest) during their first years of operation would work even better to reduce the burden on liquidity-constrained firms. The limitation of enacting such a policy for the economy as a whole, however, is that in a developing economy it may require substantial short-run government deficits. If economy-wide tax postponement is infeasible, there may be grounds for granting small agricultural producers a special opportunity to postpone taxes, on the theory that capital constraints are likely to be especially problematic, and that the development of an agricultural sector is a high priority during the transition to free markets.

POLICIES TO REDUCE FARMERS' EXPOSURE TO RISK

Even though farmers' liquidity constraints make them more risk-averse (because the costs of adverse income or wealth shocks include reduced access to internal and external finance), they are forced by incentive constraints to own their own farms and bear a great deal of risk, both from weather and demand disturbances. Among possible options for the government to reduce agricultural producers' exposure to risk, several deserve consideration.

One option is to encourage (or perhaps even establish) commodity futures markets to help farmers diversify price risk. Opportunities for diversification would still be limited to current income rather than wealth, but this would be a step in the right direction. A rationale for government intervention could be the high start-up costs and risk that might delay the development of futures markets. Carlton (1987) shows that 40 percent of all futures markets in the United States failed within the first five years of being established. It is worth noting that futures clearing houses are currently exploring plans to have worldwide twenty-four hour trading networks in basic commodity futures.

The government should also encourage private insurers to provide crop insurance. It may be that the public net benefits of providing such insurance are greater than the private net benefits (again, because of fixed costs associated with establishing institutions). In that case, if private insurers fail to appear, the government might start its own program, but it should be financed by marginal-cost pricing of insurance premiums.

Price support programs (sometimes with accompanying supply reductions) intended to stabilize agricultural prices have been an utter failure in the U.S. and are definitely to be avoided

as a means of lessening capital market constraints. U.S. price supports have failed to control market prices through supply management because the current U.S. crop is not the only source of foodstuffs in the world. Recent experience has shown that other countries will respond to prices to smooth the price effects of supply changes in the U.S., partly through new output and partly through stored commodities.

As Learn, Martin, and McCalla (1986) point out, most of the benefits to farmers under the U.S. support programs accrue to the top tenth percentile of the size distribution. If the goal of agricultural supports is to help maintain small vulnerable farmers with limited net worth, the U.S. could spend far less and accomplish far more by targeting support to small farmers.

FOREIGN EXCHANGE RATE MANAGEMENT

One source of agricultural price volatility that a single country can control is its exchange rate. Pegging their currencies to an important trading partner with a stable monetary policy (for example, Germany) might be beneficial for Central and Eastern European countries trying to increase predictability of prices.

Exchange rate volatility may have been an important component of the boom and bust in American agriculture during the 1970s and 1980s. Prior to the collapse of fixed exchange rates in 1973, the cyclical sensitivity of agricultural income in the U.S. was practically nil, but this changed markedly under floating exchange rates (Calomiris, Hubbard, and Stock 1986). In a simple bivariate regression, movements in national income explained 3 percent of the variation in farm income during the period 1954–1972. For the period 1973–1984 national income explained 55 percent of the variation in farm income. One explanation for these findings is that agricultural income and national income were both closely related to the exchange rate in the latter period. Indeed, there was a strong association between merchandise exports and agricultural income during the period 1973–1984. Strong links between exchange rate movements and merchandise exports, or its agricultural component, have been reported by many researchers (Bryant, Holtham, and Hooper 1988). According to Data Resources Inc. (1989), the exchange rate elasticity of demand for real agricultural exports in the U.S. is roughly -0.4.

While there may be advantages to farm income predictability produced by fixed exchange rates, there would be costs to setting up a fixed exchange rate system that is prone to large devaluations. Thus the case for fixed exchange rates hinges on the ability of the government to commit credibly to maintain its exchange rate peg. Credibility depends on a long-run balanced budget in fiscal policy, and the creation of a monetary authority whose commitment to the exchange rate is its first priority. It also helps if that monetary authority can coordinate its actions with other monetary authorities. Eichengreen's (1990) analysis of the success of fixed exchange rates under the classical gold standard, and the failure of fixed exchange rates in the interwar and post-World War II periods, argues for the central importance of fiscal credibility and coordination among trading partners. If credibility and coordination are lacking, collapse is inevitable, and is often hastened by private capital flows. On the other hand, in the presence of credibility and coordination, domestic disturbances do not threaten the exchange rate, and capital flows act as a stabilizing influence on the balance of payments. The lesson for current policymakers is clear: before establishing fixed exchange rates (and long before opening up

international capital markets under fixed exchange rates), a nation must place its own fiscal and monetary affairs in order, and establish rules for coordinated action with its trading partners.

GOVERNMENT CREDIT PROGRAMS FOR AGRICULTURE

The seemingly obvious answer to the problem of capital market imperfections is government credit assistance to farmers. The U.S. government, for example, has provided direct loans, loan guarantees, and subsidized financing through the semi-public Farm Credit System. But there are several problems with the idea of a government making or guaranteeing loans to farmers. If the reason private supply of credit is scarce is high fixed cost (in a physical sense) to potential lenders, then government intervention may be very beneficial.

While governments may have different (collective) objectives and deeper pockets than private suppliers of credit, they typically do not have better information. If the lack of private credit supply to farmers is attributable to asymmetric information, and if the government's information is no better than that of private credit suppliers, then government loans, guarantees, or loan subsidies may not provide assistance where it is needed most, and can be very costly.

The costs of government credit programs include administrative expenses, defaults, and resource misallocations. During the agricultural collapse of the early 1980s in the U.S., default rates on government-provided credit were roughly double those of privately initiated loans (Calomiris, Hubbard, and Stock 1986).⁴ Braverman and Guasch (1986) argue that high default rates on government credit are an important general phenomenon. These considerations are particularly relevant for Central and Eastern Europe, where government resources are meager, and the potential gains from alternative uses of funds are high. Pulley (1989, p. iii), finds that government credit programs often distort resource allocation in ways that are to the long-run detriment of poorer farmers:

Low interest rates and large capital subsidies, although attractive to the poor in the short-term, are found not to be in their long-term interest since they distort investment scale and choice, preferences for self-employment, encourage misappropriation, and cause banks to limit their future lending to such clients.

Pulley advocates rationalizing the loan pricing scheme for supported farmers, decentralizing investment allocation decisions, and targeting temporary aid only to the most needy capital-constrained borrowers.

High rates of default and the misallocation of credit are not the only disadvantages of "throwing money at the problem" of rural credit scarcity. In addition, such policies may destabilize local land markets and thus make farm ownership even more difficult for worthy borrowers who are denied access to government programs. Carey (1989) argues that the government-subsidized credit boom of the 1970s in the U.S. caused a speculative bubble in U.S.

⁴ Additional evidence of the relative disadvantages that governments face due to information asymmetry, and consequent relatively high rates of debt default, is provided in Aleem's (1985) thorough microeconomic analysis of the operation of rural credit markets in Pakistan. Aleem finds that unsecured loans by informal lenders experienced few defaults (3 percent), while secured government loans defaulted at a high rate (20 percent).

farmland prices, which set the stage for the collapse of land values in the early 1980s. Indiscriminate credit permitted the most risk-loving and optimistic segment of the population to determine the value of farmland. In stock and bond markets, selling short allows pessimists and optimists to both participate in determining market prices, but this is not feasible in land markets. Thus, when an especially optimistic or risk-loving segment of the population is given access to credit to purchase land, it will also determine the price of land. According to this argument, government credit subsidies and direct loans can amplify agricultural risk, remove some of the information content in land prices, and crowd out liquidity-constrained farmers without access to government credit.

Finally, as Braverman and Stiglitz (1982); and Bell (1988) emphasize, government credit relief to tenant farmers may not be effective in relaxing borrowing constraints if the landlord exercises substantial monopoly power. The benefits of government programs may, for example, simply be passed on to the landlord in the form of higher rent, credit, or input costs. These considerations suggest that land redistribution will enhance the effectiveness of government credit programs, and provide a further motivation for redistributing land and encouraging competitive markets for input supplies and credit.

COMBINING GOVERNMENT LIQUIDITY WITH LOCAL INCENTIVE STRUCTURE

In many countries, governments are coming to understand that they need to imitate and encourage traditional lending practices, rather than circumvent them. Furthermore, recent research has shown that government credit programs typically offer financial contracts simpler than those that private local credit suppliers find it possible to offer. As much of the asymmetric-information literature suggests, outsiders often do best by relying on simple debt contracts, perhaps secured by land, while insiders with lower costs of screening and state verification can offer a richer, more state-contingent contracting structure, which allows greater diversification of risk.

Aleem (1985; 1990) finds that lending by informal moneylenders in Pakistan was part of an intricate multi-dimensional contract between borrower and lender, including emergency aid, price insurance, and input supply. The informal moneylenders often served several villages and succeeded in diversifying across locations and activities. Survey evidence indicated the importance of investing in information to make credit arrangements profitable for lenders. Typically, the informal lender who had been in the market for about five years claimed that he would spend about two days screening and making enquiries about a loan applicant. This occurred even though borrower and lender had business transactions with one another for at least one season. The total amount of effort taken up by screening was further raised by a rejection rate in excess of 50 percent. Lenders enhanced the effectiveness of their screening process by pooling information on defaulters. Default effectively eliminated the borrower from access to the informal credit market (Aleem 1990).

Similar descriptions of the system and form of informal moneylending have been made repeatedly for other times and places, with a common emphasis on the importance of personal and related business ties through their effects on enforceability and information.⁵

Another common theme of many of these studies is the potential for mutual insurance that comes from enhanced information and enforceability of contracts. Udry (1991) shows that Nigerian farmers' loans have implicit state-contingent interest charges, and Feder and Lau (1989) characterize informal loans as almost entirely consumption insurance. Informal lending, unlike loans from banks or the government, typically does not require land collateral. Often arrangements are made through "rotating savings and credit associations" of closely associated individuals that act as cooperative borrowing and lending pools for participants (World Bank 1989, chapter 8).

As policymakers and economists have become more familiar with the functioning of informal markets, and more respectful of their relative success in providing funds and sharing risk, there has been growing interest in finding ways to combine the objectives and wealth of the government with the incentive structure, enforcement powers, and information advantages of local networks of borrower-lender relationships.

One approach is for the government to employ private moneylenders. In Malaysia, local moneylenders have been used with success to initiate and recover loans (Wells 1978). The key to such arrangements is to link the compensation of the local moneylender to the performance of the loan portfolio he originates. This approach is controversial, however, since local moneylenders may act as monopolists to restrict access to credit. Even if interest rates are restricted by the government, the local agent can sell the rights to credit, and thus earn monopoly rent.

An alternative approach to government credit supply that has been gaining ground among policymakers and theorists is to rely on coinsurance among borrowers to ensure incentive-compatibility. Stiglitz (1990) has suggested that co-signing arrangements among rural borrowers would help to mitigate information problems faced by government lenders. Co-signing can reduce an individual borrower's incentive to undertake risky projects by increasing the monitoring of project types. Increased monitoring is incentive-compatible because neighbor borrowers stand to lose by the risky activities of others, and will therefore be willing to spend resources monitoring each other and reporting cheating to the government. One could also extend Stiglitz's (1990) argument to a dynamic context, where group loan performance might affect access to future loans, and hence amplify incentives to monitor (see related arguments in Basu 1986).

The general point is that if the government can create an incentive for farmers to screen each other and monitor one another's actions, then it can relax financing constraints without experiencing the problems associated with indiscriminate credit subsidies and government loans. In fact, this general idea has been employed with great success in a variety of countries (Huppi and Feder 1990). Two examples might help to illustrate this.

⁵ Examples include: for India, Bell 1990, Darling 1925, Harriss 1982, and Reserve Bank of India 1954; for Chile, Nisbet 1967; for China, Feder and Lau 1989; for Nigeria, Udry 1991; for Thailand, Poapongsakorn 1988, Siamwalla 1989, and Siamwalla and others 1990; for general reviews, see World Bank 1989, chapter 8, and Huppi and Feder 1990.

In a working paper version of Siamwalla and others (1990), the authors described the operations of Thailand's BAAC, which operates as a government-financed agricultural lender to farmers of moderate means:

The BAAC has a complex requirement for a farmer to be able to borrow from it. Most of its loans are given to groups of eight to fifteen farmers for working capital. They are jointly liable for every member's loan. Before the first loan is given out, the bank's officer would go to the borrowers' village to examine the activities of the village. . . . the village must have a certain number of reasonably well-off individuals. . . . the BAAC also sends its officers to check up on their borrowers during the growing season of the crop. The most stringent requirement imposed by the BAAC, however, remains its refusal to roll over any debt owed on its working-capital loans. All borrowers are required to repay the principal when the loan falls due, even though in the vast majority of the cases, both the bank and the borrower expect the loan to be recontracted within a month after borrowing.

Farmers with liquidity problems who are unable to meet their obligations are forced to turn to the more expensive informal credit market for a bridge loan. According to the BAAC management, forcing liquidity loans to be financed through the informal market is a way of ensuring good performance by borrowers.

There are two key elements in the Thai example. First, borrowers are jointly liable, and therefore have an incentive to choose their partners and monitor them judiciously. Second, the short-term structure of loans helps to ensure that the group will behave properly. One might imagine that long-term loans could encourage some collective risk-loving behavior by the entire group. But if the group is forced to make regular payments of principal, and if it must take into account the possibility of satisfying the criteria of well-informed local moneylenders during liquidity squeezes, the incentives to take on risk as a collective will be greatly reduced. The Thai experiment has been quite successful, with rapid growth since its inception in 1966, and small rates of default (3 percent).

Another highly successful experiment that combines government credit with mutually liable, self-regulating borrower groups is Bangladesh's Grameen Bank. The Grameen Bank makes loans to individuals who are organized into five-person groups. Unlike the BAAC, the Grameen Bank's borrowers are the landless poor. Here the mutual liability provision of the BAAC might be insufficient because the assets of borrowers are too small to provide credible insurance against government losses. Instead, the Grameen Bank relies on borrowers' potential contingent wealth as its "collateral." If farmers in any group default, all members of the group lose future access to low-cost government-supplied credit, and therefore, are deprived of their only opportunity to make the transition from landless poverty.

The bank sends its officials to the village to explain the function of the bank, to identify potential customers, and to encourage the formation of borrower groups. Groups formed are observed for a month "to see if members are conforming to the discipline of the Bank," which includes weekly meetings and weekly savings contributions. "After the observation period, two members of the group are chosen to receive loans. The loan is to be repaid in weekly

installments of 2 percent of the loan amount. The loan utilization and repayment behavior of the first two loanees are observed for a month or two. Only when these members behave properly, do the other members become eligible for receiving loans. If one of the members defaults the whole group becomes ineligible to get repeat loans. Because of these restrictions, a lot of group pressure works to keep the records of individual members clean." (Hossain 1984, p. 7)

There is also a mutual insurance aspect to each Grameen Bank group. Unlike the BAAC's borrowers, the Grameen Bank's landless borrowers would not have adequate access to formal markets during times of financial stress. Furthermore, the penalty of denied access to the group as a whole makes insurance against accidental default by a borrower important. Mutual insurance against accidental default also helps to ensure government credibility. Otherwise, government officials would be tempted to relax the penalty in some circumstances, which no doubt would encourage "accidents." Mutual insurance against short-run liquidity and long-run default is provided for in two forms:

One of the conditions of the loan is that the group members save one taka every week plus 5 percent of the loan amount, which is kept aside at the time of loan disbursement. The savings form the Group Fund from which the members could borrow at times of need, at terms to be fixed by the group. . . . Another fund called the Emergency Fund is created by the members for insurance against default, death, disability, and other accidents, with additional payments of 25 percent of the interest due on the loan. (Hossain 1984, p. 8)

The Grameen Bank thus operates as a two-tiered credit system. The government provides simple loans to bank group members, and the bank group members provide mutual insurance to one another. This system encourages local monitoring and enforcement among members, where it is most effectively accomplished. Members have proper incentives because they contribute to a common insurance fund, and because they stand to lose valuable access to government credit subsidies if they default.

The Grameen Bank has been a success since its humble beginnings in 1976. By February 1987, it was operating 300 branches covering 5,400 villages, with nearly 250,000 people participating. Its default rates are extremely low, with recovery rates as of February 1987 of 97 percent within one year of disbursement, and 99 percent within two years (World Bank 1989, p. 117). The Bank has had a substantial positive effect on the incomes of the rural poor in Bangladesh (Hossain 1984, chapter 5), which was its main intent. Administrative costs have been large and rising, with current costs of roughly 18 percent of loans, which implies negative cash flow for the program. But these costs are necessary if the bank staff is properly to administer the program, which includes educating and monitoring the groups. Presumably achievement of the government's objectives of greater equity and efficiency through the relaxation of borrowing constraints compensates for the negative cash flows.

These examples suggest that it is possible in practice, as well as in theory, to marry credible, locally administered incentive structures with government objectives and resources. For coinsurance and co-signing schemes to work, however, several potential problems must be avoided. Success requires sufficient gains to individual participants from monitoring and

reporting cheating. This in turn requires a small group size; otherwise the gains to monitoring are spread too thinly among participants to justify the individual effort to monitor (Calomiris 1989).

Second, the group as a whole must have enforcement power over its members. Groups should be able to select their own members and eject those who are unwilling to play by the rules of the group.

Third, governments must impose hard, credible rules on groups, in the form of regular required repayment of principal and exclusion of defaulting groups from future loan programs, and government must not create the impression that, as the last resort, it will bail farmers out.⁶

TOWARD AN EFFICIENT, ACTIVIST GOVERNMENT CREDIT POLICY

There are valid reasons for government to supplement privately established agricultural credit facilities with its own programs. Private intermediaries and governments have different objectives, and some of the advantages that come from relaxing credit constraints are not "internalized" by private suppliers. Governments care about promoting equitable distribution of income partly for the efficiency gains that wealth creation or redistribution allow. Governments may also have lower discount rates than private intermediaries, and thus may be more willing to bear fixed costs of entry into markets that promise future gains.

In channeling credit assistance to farmers, government should avoid several pitfalls. First, in contrast to many current programs of assistance through loans or price supports, aid should be concentrated in the hands of those who will use it well. Simple government transfers or indiscriminate subsidies to the rural poor are an extremely "leaky bucket" for transferring resources to productive credit-constrained farmers. By relying on subsidies to cooperative voluntary associations like the Grameen Bank the government allows good borrowers to "self-select" into the subsidized groups, and thus prevents the waste and resource misallocation that come from massive indiscriminate subsidies.

Second, mechanisms must be established at the local level that ensure that government credit is properly allocated. Channeling funds through groups of mutually liable farmers with proper incentives to screen, monitor, and enforce contracts makes theoretical sense, and has been proven effective. Co-signing and mutual insurance provide the additional benefit of encouraging risk-sharing among farmers.

Finally, government credibility is essential to successful credit allocation. Unless the government enforces penalties and insists on timely repayment of debt, local incentive structures will be useless. As with so many other aspects of government policy that can mitigate capital market imperfections—property redistribution, private contract enforcement, the creation of hard budget constraints, exchange rate targets, and stable fiscal policy—the government's credible commitment to play by the rules is the *sine qua non* of success.

These considerations pose a problem for any "quick-fix" attempts at government-sponsored credit market subsidization for Central and Eastern Europe and the Soviet Union. Credit subsidies cannot substitute for creation of private intermediaries, privatization of land,

⁶ The abuses of government loans to Israeli farm cooperatives (*moshavim*) is discussed in Kislev, Lerman, and Zusman (1989).

credible reform programs, and commitment to the rule of law. Economic development of agricultural resources and improvement of capital markets must await these institutional and political changes.

REFERENCES

Aganbegyan, Abel. 1988. *The New Stage of Perestroika*. Washington, D.C: Institute for East-West Security Studies.

Akerlof, George. 1970. "The Market for 'Lemons': Qualitative Uncertainty and the Market Mechanism." *Quarterly Journal of Economics* 84 (August), pp. 488–500.

Aleem, I. 1985. "Information, Uncertainty, and Rural Credit Markets in Pakistan." Ph.D dissertation, Oxford University.

_____. 1990. "Imperfection Information, Screening, and the Costs of Informal Lending: A Study of a Rural Credit Market in Pakistan." *The World Bank Economic Review* 4 (September), pp. 329–50.

Basu, K. 1986. "One Kind of Power." *Oxford Economic Papers* 38 (July), pp. 259–82.

Bell, Clive. 1988. "Credit Markets and Interlinked Transactions." In H. Chenery and T. N. Srinivasan, eds., *Handbook of Development Economics*, Vol. I. Amsterdam: Elsevier Science Publishers.

_____. 1990 "Interactions Between Institutional and Informal Credit Agencies in Rural India." *The World Bank Economic Review* 4 (September), pp. 297–328.

Bernanke, Ben S. 1983. "Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression." *American Economic Review* 73 (June), pp. 257–76.

Bernanke, Ben S., and Mark L. Gertler. 1990 "Financial Fragility and Economic Performance." *Quarterly Journal of Economics* 105 (February), pp. 87–114.

Bharadwaj, Krishna. 1974. *Production Conditions in Indian Agriculture*. Cambridge: Cambridge University Press.

Binswanger, Hans, and Mark Rosenzweig. 1986. "Behavioral and Material Determinants of Production Relations in Agriculture." *Journal of Development Studies* 22 (April), pp. 503–39.

Blejer, Mario I., and Silvia B. Sagari. 1991. "Hungary: Financial Sector Reform in a Socialist Economy." PPR Working Paper 595. Policy, Planning, and Research Department. Washington, D.C.

- Boyd, John, and Edward Prescott. 1986. "Financial Intermediary Coalitions." *Journal of Economic Theory* 38 (April), pp. 211–32.
- Brandt, Loren. 1990. "Contract Choice in Chinese Agriculture: The 1930s." Working Paper. University of Toronto, Toronto, Ont.
- Braverman, Avishay, and J. Luis Guasch. 1986. "Rural Credit Markets and Institutions in Developing Countries: Lessons for Policy Analysis from Practice and Modern Theory." *World Development*, no. 10/11, pp. 1253–67.
- Braverman, Avishay, and Joseph E. Stiglitz. 1982. "Sharecropping and the Interlinking of Agrarian Markets." *American Economic Review* 72 (September), pp. 695–715.
- Bryant, Ralph C., Gerald Holtham, and Peter Hooper, eds. 1988. *External Deficits and the Dollar: The Pit and the Pendulum*. Washington, D.C.: The Brookings Institution.
- Butters, J. K., and J. V. Lintner. 1945. *Effects of Federal Taxes on Growing Enterprises*. Cambridge, Mass.: Harvard Business School Press.
- Calomiris, Charles W. 1989. "Deposit Insurance: Lessons from the Record." *Economic Perspectives* 13 (May/June), pp. 10–30. Federal Reserve Bank of Chicago.
- _____. 1990. "Is Deposit Insurance Necessary?" *Journal of Economic History* 50 (June), pp. 283–95.
- _____. Forthcoming. "Do Vulnerable Economies Need Deposit Insurance? Lessons from the U.S. Agricultural Boom and Bust of the 1920s." In Philip Brock, ed., *If Texas Were Chile: Financial Risk and Financial Regulation in Commodity-Exporting Economies*.
- Calomiris, Charles, and Gary Gorton. 1991. "The Origins of Banking Panics: Models, Facts, and Bank Regulation." In R. Glenn Hubbard, ed., *Financial Markets and Financial Crises*. Chicago, Ill.: University of Chicago Press.
- Calomiris, Charles, and R. Glenn Hubbard. 1989. "Price Flexibility, Credit Availability, and Economic Fluctuations: Evidence from the United States, 1894–1901." *Quarterly Journal of Economics* 104 (August), pp. 429–52.
- _____. 1990. "Firm Heterogeneity, Internal Finance, and 'Credit Rationing'." *The Economic Journal* 100 (March), pp. 90–104.
- _____. 1991. "Investment and Financing Constraints During the Recovery from the Great Depression: Evidence from the Undistributed Profits Tax of 1936–1937." Working Paper. The Wharton School, University of Pennsylvania, Philadelphia, Penn.

- Calomiris, Charles, R. Glenn Hubbard, and James H. Stock. 1986. "The Farm Debt Crisis and Public Policy," *Brookings Papers on Economic Activity* 2. Washington, D.C.: The Brookings Institution.
- Calomiris, Charles, and Charles M. Kahn. 1991. "The Role of Demandable Debt in Structuring Optimal Banking Arrangements." *American Economic Review* 81 (June), pp. 497-513.
- Calomiris, Charles, Charles M. Kahn, and Stefan Krasa. 1991. "Optimal Bank Liquidation Under Moral Hazard." Working Paper 13, Federal Reserve Bank of Chicago.
- _____, and Larry Schweikart. 1988. "Was the South Backward? North-South Differences in Antebellum Banking During Crisis and Normalcy." Working Paper. The Wharton School, University of Pennsylvania, Philadelphia, Penn.
- _____, and Larry Schweikart. Forthcoming. "The Panic of 1857: Origins, Transmission, and Containment." *Journal of Economic History*.
- Campbell, Tim, and William Kracaw. 1980. "Information Production, Marketing Signalling and the Theory of Financial Intermediation." *Journal of Finance* 35 (September), pp. 863-82.
- Carey, Mark. 1989. "Feeding the Optimists: The Federal Land Banks, Land Market Efficiency, and the Farm Credit Crisis." Working Paper. University of California, Berkeley, Calif.
- Carlton, Dennis W. 1987. "The Theory and the Facts of How Markets Clear: Is Industrial Organization Valuable for Understanding Macroeconomics?" NBER Working Paper No. 2178. Cambridge, Mass.: National Bureau of Economic Research.
- Darling, M. L. 1925. *The Punjab Peasant in Prosperity and Debt*. Oxford: Oxford University Press.
- Data Resources Inc. 1989. *The DRI Model*. New York, NY: McGraw-Hill.
- David, Paul A. 1971. "The Mechanization of Reaping in the Antebellum Midwest." in R. W. Fogel and S. L. Engerman, eds., *The Reinterpretation of American Economic History*. New York, NY: Harper & Row.
- Devereux, Michael, and Fabio Schiantarelli. 1990. "Investment, Financial Factors, and Cash Flow: Evidence from U.K. Panel Data." In R. Glenn Hubbard, ed., *Asymmetric Information, Corporate Finance, and Investment*. Chicago, Ill.: University of Chicago Press.

- DeMeza, David, and David C. Webb. 1987. "Too Much Investment: A Problem of Asymmetric Information." *Quarterly Journal of Economics* 102 (May) pp. 281–92.
- Diamond, Douglas. 1984. "Financial Intermediation and Delegated Monitoring." *Review of Economic Studies* 52 (166), pp. 393–414.
- Eichengreen, Barry. 1990. *Golden Fetters: The Gold Standard and the Great Depression, 1919–1939*. Unpublished Manuscript. University of California, Berkeley, California.
- Evanoff, Douglas D. 1988. "Branch Banking and Service Accessibility." *Journal of Money, Credit and Banking* 20 (May), pp. 191–202.
- Fazzari, S. M., R. G. Hubbard, and B. C. Petersen. 1989. "Financing Constraints and Corporate Investment." *Brookings Papers on Economic Activity* 1. Washington, D.C.: The Brookings Institution.
- Feder, Gershon, and Lawrence J. Lau. 1989. "The Credit Market in Rural China." Working Paper. Department of Economics, Stanford University, Palo Alto, California.
- Fisher, Irving. 1933. "The Debt-Deflation Theory of Great Depressions." *Econometrica* 1 (October), pp. 337–57.
- Fry, Maxwell J. 1988. *Money, Interest, and Banking in Economic Development*. Baltimore, Md.: The Johns Hopkins University Press.
- Gale, Douglas, and Martin Hellwig. 1985. "Incentive-Compatible Debt Contracts: The One Period Problem." *Review of Economic Studies* 52(4), no. 171, pp. 647–63.
- Garcia, Philip, Steven T. Sonka, and Man Sik Yoo. 1982. "Farm Size, Tenure, And Economic Efficiency in a Sample of Illinois Grain Farms." *American Journal of Agricultural Economics* 64 (February), pp. 119–23.
- Gelb, Alan H. 1989. "Financial Policies, Growth and Efficiency." PPR Working Paper 202. World Bank Policy, Planning, and Research Department, Washington, D.C.
- Gelb, Alan H., et al. 1980. "Brazil: Financial Systems Review." World Bank Report no. 2790a. Country Economics Department, Washington, D.C.
- Gertler, Mark L. 1988. "Financial Structure and Aggregate Economic Activity: An Overview." *Journal of Money, Credit and Banking* 20 (August, Part II), pp. 559–88.
- Greenwald, Bruce C., Joseph E. Stiglitz, and Andrew M. Weiss. 1984. "Informational Imperfections in Capital Markets and Macroeconomic Fluctuations." *American Economic Association Papers and Proceedings* 74 (May), pp. 194–200.

- Hall, Bruce F., and E. P. Le Veen. 1983. "Farm Size and Economic Efficiency: The Case of California." *American Journal of Agricultural Economics* 59 (November), pp. 589–600.
- Harriss, Barbara. 1982. "Money and Commodities: Their Interaction in a Rural Indian Setting." *Development Digest* 20 (January), pp. 16–23.
- Hoshi, Takeo, Anil Kashyap, and David Scharfstein. 1991. "Corporate Structure, Liquidity, and Investment: Evidence from Japanese Industrial Groups." *Quarterly Journal of Economics* 106 (February), pp. 33–60.
- Hossain, Mahabub. 1984. *Credit for the Rural Poor: The Experience of the Grameen Bank in Bangladesh*. Dacca: The Bangladesh Institute of Development Studies.
- Hubbard, R. Glenn, and Anil Kashyap. 1990. "Internal Net Worth and the Investment Process: An Application to U.S. Agriculture." NBER Working Paper No. 3339. Cambridge, Mass.: National Bureau of Economic Research.
- Huppi, Monika, and Gershon Feder. 1990. "The Role of Groups and Credit Cooperatives in Rural Lending." *The World Bank Research Observer* (July), pp. 187–204.
- Jackson, Wes, Wendell Berry, and Bruce Coleman, eds. 1984. *Meeting the Expectations of the Land: Essays in Sustainable Agriculture and Stewardship*. San Francisco, Ca.: North Point Press.
- Jaffee, Dwight M., and Thomas Russell. 1976. "Information Imperfection, Uncertainty, and Credit Rationing." *Quarterly Journal of Economics* 90 (November), pp. 651–66.
- Kislev, Yoav, Zvi Lerman, and Pinhas Zusman. 1989. "Cooperative Credit in Agriculture—The Israeli Experience." Working Paper. Hebrew University, Rehovot, Israel.
- Kornai, János. 1986a. *Contradictions and Dilemmas: Studies on the Socialist Economy and Society*. Cambridge, Mass.: MIT Press.
- _____. 1986b. "The Hungarian Reform Process: Studies on the Socialist Economy and Society." *Journal of Economic Literature* 24 (December), pp. 1687–1737.
- Krause, Kenneth R., and Leonard R. Kyle. 1970. "Economic Factors Underlying the Incidence of Large Farming Units: The Current Situation and Probable Trends." *American Journal of Agricultural Economics* 52 (December), pp. 748–63.
- Lacker, Jeffrey. 1991. "Collateralized Debt as the Optimal Contract." Working Paper. Federal Reserve Bank of Richmond.

- Learn, Elmer W., Phillip L. Martin, and Alex F. McCalla. 1986. "American Farm Subsidies: A Bumper Crop." *The Public Interest* 84 (Summer), pp. 66–78.
- Lee, Linda K. 1980. "The Impact of Landownership Factors on Soil Conservation." *American Journal of Agricultural Economics* 62 (December) pp. 1070–76.
- Leland H., and D. Pyle. 1977. "Informational Asymmetries, Financial Structure, and Financial Intermediation." *Journal of Finance* 32 (May), pp. 371–87.
- McKinnon, Ronald I. 1973. *Money and Capital in Economic Development*. Washington, D.C.: The Brookings Institution.
- _____. 1989. "The Order of Liberalization for Opening the Soviet Economy." Working Paper. Department of Economics, Stanford University, Palo Alto, Calif.
- _____. 1990a. "Stabilizing the Ruble: The Problem of Internal Currency Convertibility." Working Paper. Department of Economics, Stanford University, Palo Alto, Calif.
- _____. 1990b. "Financial Repression and the Productivity of Capital: Empirical Findings on Interest Rates and Exchange Rates." Working Paper. Department of Economics. Stanford University, Palo Alto, Calif.
- Meyer, J. R., and E. Kuh. 1957. *The Investment Decision*. Cambridge, Mass.: Harvard University Press.
- Myers, Stewart C. 1984. "The Capital Structure Puzzle." *Journal of Finance* 39 (July), pp. 575–92.
- Myers, Stewart C., and Nicholas S. Majluf. 1984. "Corporate Financing and Investment Decisions When Firms Have Information that Investors Do Not Have." *Journal of Financial Economics* 13 (June), pp. 187–221.
- Newbery, D. M. G., and J. E. Stiglitz. 1981. *The Theory of Commodity Price Stabilization—A Study of the Economics of Risk*. Oxford: Clarendon Press.
- Nisbet, C. T. 1967. "Interest Rates and Imperfect Competition in the Informal Credit Markets of Rural Chile." *Economic Development and Cultural Change* 16 (October), pp. 73–90.
- Otsuka, Keijiro, and Yujiro Hayami. 1988. "Theories of Share Tenancy: A Critical Survey." *Economic Development and Cultural Change* 37 (October), pp. 31–68.
- Pimental, David, et al. 1976. "Land Degradation: Effects on Food and Energy Resources." *Science* 194 (October 8), pp. 149–55.

- Poapongsakorn, Nipon. 1988. "Informal Credit Markets in Thailand: Case Studies of Contracts, Market Structure, Behavior, and Interest Rates." (in Thai). Working Paper. Thailand Development Research Institute, Bangkok.
- Pulley, Robert V. 1989. "Making the Poor Creditworthy: A Case Study of the Integrated Rural Development Program in India." World Bank Discussion Paper 58. Washington, D.C.
- Ramakrishnan, Ram T. S., and Anjan V. Thakor. 1984. "Information Reliability and a Theory of Financial Intermediation." *Review of Economic Studies* Vol. 51(3), no. 166, pp. 415-32.
- Reserve Bank of India. 1954. *All-Indian Rural Credit Survey*. Bombay.
- Shaban, Radwan. 1987. "Testing Between Competing Models of Sharecropping." *Journal of Political Economy* 95 (October), pp. 893-920.
- Shaw, Edward S. 1973. *Financial Deepening in Economic Development*. New York, NY: Oxford University Press.
- Shmelev, Nikolai, and Vladimir Popov. 1989. *The Turning Point: Revitalizing the Soviet Economy*. New York, NY: Doubleday.
- Siamwalla, Ammar, et al. 1990. "The Thai Rural Credit System: Public Subsidies, Private Information, and Segmented Markets." *The World Bank Economic Review* 4 (September), pp. 271-95.
- Siamwalla, Ammar, ed. 1989. *Rural Credit in Thailand*. (in Thai). Bangkok: Thailand Development Research Institute.
- Singh, Nirvikar. 1989. "Theories of Sharecropping." In Pranah Bardhan, ed., *The Theory of Agrarian Institutions*. New York, NY: Clarendon Press.
- Stiglitz, Joseph E. 1990. "Peer Monitoring and Credit Markets." *The World Bank Economic Review* 4 (September), pp. 352-66.
- Stiglitz, Joseph E., and Andrew Weiss. 1981. "Credit Rationing in Markets with Imperfect Information." *American Economic Review* 71 (June), pp. 393-410.
- Townsend, Robert M. 1979. "Optimal Contracts and Competitive Markets with Costly State Verification." *Journal of Economic Theory* 21 (October), pp. 265-93.
- Tybout, James R. 1983. "Credit Rationing and Investment Behavior in a Developing Country." *Review of Economics and Statistics* 65 (4), pp. 598-607.

- Udry, Christopher. 1991. "Rural Credit in Northern Nigeria." Ph.D. dissertation. Yale University, New Haven, Ct.
- Wells, R. J. D. 1978. "An Input Credit Programme for Small Farmers in West Malaysia." *Journal of Administration Overseas* 17 (January), pp. 4-16.
- Williamson, Stephen D. 1986. "Costly Monitoring, Financial Intermediation, and Equilibrium Credit Rationing." *Journal of Monetary Economics* (September), pp. 156-79.
- Woodruff, Archibald M., Jr. 1937. *Farm Mortgage Loans of Life Insurance Companies*. New Haven, Conn.: Yale University Press.
- World Bank. 1989. *World Development Report*. New York, NY: Oxford University Press.
- Wright, Gavin. 1978. *The Political Economy of the Cotton South: Households, Markets, and Wealth in the Nineteenth Century*. New York, NY: W. W. Norton & Company.
- _____. 1986. *Old South, New South: Revolutions in the Southern Economy Since the Civil War*. New York, NY: Basic Books, Inc.

Part IV Regional Case Studies

POLAND

*Włodzimierz Rembisz and Dariusz K. Rosati**

Editors' Note: This paper was written at an early stage of the Polish economic transition. It describes the agricultural situation and problems during the last phase of communist government and reviews the major tasks of the agricultural transition.

The Polish economic program was launched in January 1990 with the support of the international community. Efforts to reduce inflation have partially succeeded; from an average rate of 586 percent in 1990, average inflation for 1991 is estimated 70 percent. In spite of growth in the private sector, however, GDP fell by 12 percent in 1990 and is expected to have fallen some 10 percent in 1991. The Polish current account went from a surplus of \$600 million in 1990 to a deficit of some \$1.6 billion¹ in 1991. Agricultural trade contributed a net surplus of \$1.3 billion in 1990, but in early 1991 food imports rose by 143 percent and food exports fell by 7 percent over the same period in 1990 as price liberalization and exchange rate changes took effect. Paris Club negotiations have somewhat reduced payments on foreign debt.

In 1990-91 the transformation in agriculture gained momentum. Prices and trade were liberalized and subsidies further reduced. Concern about rising food and agricultural imports led the government to alter the tariff structure twice in 1991, increasing tariffs for several commodities (sugar, butter, eggs, most live animals, and some vegetables). The authors of this chapter presage the rise of protectionism and argue that selective intervention and protection is needed. The appropriate degree and kind of intervention was a subject on which several conference participants disagreed with the authors, and it has become one of the more contentious aspects of Polish economic policy. The Association Agreement with the EC provides new export opportunities for Polish agriculture, but also envisages increased access for EC agricultural products in the future. The dissolution of state-owned enterprises has been very slow. The law for restructuring and privatizing the state farm sector was passed by the parliament (Sejm) in October 1991. The law creates a state land property agency to facilitate the restructuring and privatizing of state farms. State farm privatization is expected to be completed in three years. The government has started to build an effective market to facilitate farmland sales and rentals. The settlement of claims from former landowners is likely to be through financial compensation. Hitherto, little has been done to improve legal and financial instruments for sales of farmland; only 200,000 hectares of farmland were sold in 1990 (about 1 percent of the total private area). Mortgages, title insurance, and leasehold instruments are also underdeveloped. On the whole, however, the first two years of Polish agricultural transformation brought more encouraging than discouraging results.

The radical economic reforms initiated in Poland in 1989 aimed at establishing a new, market-based economic system. The strong medicine of the IMF-sanctioned stabilization program in early 1990 was intended to produce a healthy environment in which a market economy could develop. The results, at least as far as mid-1990, indicate some success in taming hyperinflation and encouraging exports. The reform and stabilization measures have

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¹ Unless stated otherwise, all dollar amounts are current U.S. dollars. A billion is 1,000 million.

drastically altered the economic environment for Polish agriculture. Key institutional reforms, however (particularly for the supply of inputs and the marketing of agricultural output), were not in place before the "big bang" of price stabilization. Poland is an excellent study of the near-term results of *some* agricultural reform coupled with swift price liberalization.

Perhaps the most distinguishing feature of Polish agriculture, compared with other countries of Central and Eastern Europe, is the dominance of private farms. More than 75 percent of arable land and 66 percent of fixed assets in agriculture are in the hands of the private sector, which accounted for 77 percent of agricultural production in 1989.

The high proportion of private farms may be an important advantage in the process of introducing market mechanisms into Polish agriculture. Unlike industry or services, no essential change in the behavior of private farmers is necessary. Even within the central planning system, family farms were autonomous and made reasonably rational economic decisions under given institutional and economic conditions. While the farms were mostly private, however, the production and supply of inputs for agriculture as well as the purchase, distribution, and processing of agricultural products were almost entirely controlled by the government. These activities were concentrated in a small number of state-owned enterprises, enjoying virtual monopolies on their services. Decisions concerning fiscal policy measures for agriculture as well as the allocation of agricultural products and the provision of credit were taken administratively, with little relation to actual market conditions or demand and supply relations. The economic structure was thus highly distorted, and the calculus of efficiency on private farms was blurred, leading to suboptimal investment and production decisions. Planning authorities indirectly determined private farmers' income and potential for further development; it should be remembered, however, that farmers were formally free to take decisions on the use of their resources, bearing attendant risks.

One of the most important features of the administrative system was almost total separation of the markets for agricultural inputs, for agricultural products, and for foodstuffs. Prices in all these markets were administratively established and controlled, with political and social criteria dominating economic ones. The principles of low, stable food prices for the population and income parity to equilibrate urban and rural incomes guided policy. Implementing these principles required massive subsidies for fertilizers, grain, feedstuff, tractors, and other agricultural inputs that were sold at relatively low prices. Official procurement prices for food were as a rule higher than retail prices, and the gap was covered by direct subsidies to food prices. There was no connection between domestic and international prices of agricultural goods.

Polish agriculture (including food processing and other agroindustrial activities) is technically and structurally very backward and inefficient. The average acreage of Polish farms was only 6 hectares in 1988, several times smaller than in Western Europe. Although Polish agriculture employs a relatively high proportion of the labor force (27.6 percent in 1988), its share of NMP is much lower (12.6 percent). Food processing is technologically obsolete and undercapitalized. Rural infrastructure, both technical and institutional, is rudimentary. These conditions are mainly due to the lack of investment in an environment that favored intensive industrial development over agriculture.

Private ownership of the most of the land is an unquestionable asset in the process of transition from central planning to a market-based economy. This does not mean that state farms

should disappear immediately; on the contrary, because of a generally higher level of capital endowment they *may* operate easily in the new environment. Establishing an institutional framework for the market mechanism to work in agriculture will require time; similarly, necessary structural changes in favor of large-scale, market-oriented, competitive farms will not occur overnight. The immediate problem is to design an appropriate government policy towards agriculture to determine an optimal degree of government intervention and of protection against international competition in the transition periods. Before turning to these issues, a closer look at recent macroeconomic developments in 1989 and 1990 is necessary in order to see how the new economic program affects agriculture.

THE POLISH ECONOMY IN 1989: AN OVERVIEW

The Polish economy entered 1989 with stagnating output, a rapidly shrinking foreign trade surplus, growing shortages in the domestic market, and soaring inflation. Deep domestic imbalances were accompanied by a chronic deficit in the current account. The foreign convertible currency debt increased from \$24 billion in 1981 to \$40 billion in 1989, almost entirely due to accumulated arrears of principal and interest. Poland was only able to pay about two-thirds of its originally scheduled debt service payments. Efforts to stabilize the foreign debt or to obtain debt relief from foreign creditors were unsuccessful in that year.²

The dominance of heavy industry, producing industrial (especially military) goods, as well as notoriously excessive investment in building, construction, and civil works, sapped potential investment in other areas. Services and traditional sectors were underdeveloped. The structure of Poland's production is compared with that of several other countries in table 10-1.

The reform-minded Communist government of Miceslav Rakowski tried to prevent crisis and restore economic equilibrium with a hastily packaged mix of economic policy measures and institutional changes, but lack of political and popular support made it unable to carry out necessary reforms. The ailing economy required radical and comprehensive treatment, including sharp price increases, unemployment, massive bankruptcies, cuts in budget expenditures, and suspension of many welfare programs. Only a strong government, enjoying genuine popular support could take risks of implementing such harsh measures. Mr. Rakowski's government lacked sufficient political power and was not conceptually and ideologically prepared to embark on a truly radical program.

Although the Rakowski government could probably not do much to prevent the oncoming economic crisis, it should be credited for introducing some institutional changes that opened the way for later market-oriented reforms. Among the most important changes was the law on entrepreneurship, passed in December 1988, which was based on a fundamental principle of economic freedom, stating that "everything is permitted that is not explicitly forbidden by law." The same law, which was termed the Polish "economic constitution," gave equal rights to all sectors of the economy, putting both public and private sectors on an equal footing, and formally opened the way for privatization of state enterprises. Another important law introduced in April 1989 removed many restrictions on foreign exchange operations and introduced foreign

² *Editors' note:* Agreement with official creditors (the Paris Club) was reached in 1991.

Table 10-1. *Composition of GDP by Sectors in Poland and Selected Countries, 1985-88*
(percent)

Sector	Poland	Peru	Rep of. Korea	Portugal	Denmark	FRG	USA
Agriculture	14.5	8.2	13.3	10.0	4.8	1.7	2.1
Industry	40.9	35.1	33.3	32.4	18.9	36.0	26.5
<i>of which:</i>							
Mining	4.0	9.7	1.4	..	1.0	1.0	3.1
Energy	1.2	1.2	2.8	1.1	1.1	2.7	3.1
Manufacturing	35.7	24.2	29.1	31.1	16.8	32.3	20.3
Construction	10.1	3.7	8.3	7.5	4.8	5.3	4.5
Other sectors, including services	34.5	51.5	45.1	50.1	72.5	57.0	66.9

.. Negligible.

Note: Industry sub-sectors may not sum to overall Industry figure due to rounding.

Source: Author's estimates on the basis of GUS (Main Statistical Office) data.

exchange auctions on a large scale, thus creating the foundation for a foreign exchange market. Other important changes included a new law on joint ventures and the liberalization of agricultural prices in August 1989, when the Rakowski government lifted price controls on agricultural inputs, food, and agricultural products. The move, though necessary in principle, was ill-prepared and not accompanied by necessary institutional changes in upstream and downstream sectors of the economy. Lifting price controls without removing state monopolies resulted in a sudden jump of agricultural prices (by 80-100 percent in one month alone) with almost no response on the supply side.

Macroeconomic policies were very erratic in that period. While recognizing the need for budget cuts, credit tightening, and more realistic interest rates, the government was unable to follow an appropriate policy. The idea of monetary restraint was already abandoned by February 1989, and administrative measures instead of economic ones were used to allocate credit and foreign exchange. The money supply was accommodating and passive, and partial attempts to restore domestic equilibrium under the "dual" price system (where so-called administrative, fixed prices for primary goods and consumer necessities coexisted with free, rising prices for all other products) led to market chaos and panic. Incomes policy was also inconsistent. The result was high and growing inflation, widespread shortages, and great anxiety about future prospects.

The economic policies of the first half of 1989 constituted a peculiar combination of *some* bold institutional changes, transforming many crucial aspects of the formerly centrally planned economy, and of conservative, short-sighted and mostly politically motivated current policy measures (Rosati 1990). The result was deep economic crisis and subsequent political transformation.

THE ECONOMIC REFORM OF 1990

When the Solidarity-led government of Prime Minister T. Mazowiecki assumed power in September 1989, the Polish economy was in a truly desperate position. Output and exports were declining, the budget deficit had reached 60 percent of expenditures, and inflation had increased from about 5 percent on a monthly basis in the first half of 1989 to between 30 and 40 percent per month by September. Shortages in the domestic market were more and more widespread, and foreign debt service was practically suspended due to the lack of convertible currency.

THE STABILIZATION PACKAGE

The new government moved quickly to approach Western countries and the International Monetary Fund, applying for support in order to implement a radical economic reform. While working with IMF experts on the design and composition of a stabilization program, the government introduced a set of emergency measures aimed at arresting the deterioration of the economy and laying foundations for a comprehensive adjustment program in 1990. These and other measures helped to prepare the economy and the society for a much more comprehensive and radical program initiated on January 1, 1990. The new program consisted of two main parts: the stabilization package, aimed primarily at reducing inflation and moving closer to price equilibrium in the domestic market, and institutional reform, which sought further to transform central planning into a market-based economy.

The stabilization package included five main policy measures aimed at drastically reducing demand.

Fiscal Policy. The huge budget deficit (which reached 7 percent of GDP in 1989), was almost completely eliminated, mostly through deep reductions in government expenditures such as food and energy subsidies, and military and internal security expenses. The measures also expanded budget revenues by eliminating various tax exemption schemes and increasing fiscal discipline. Subsidies were particularly important, and from 1989 to 1990 the share of subsidies in total government expenditures declined from 36 percent to less than 10 percent.

Monetary Policy. Credit and money supply were drastically reduced by raising interest rates to positive real levels and introducing bank-specific credit rationing, especially for the government sector.

Exchange Rate Policy. Parallel measures applied were a sharp devaluation of the zloty and the introduction of so-called internal convertibility of the currency.

Incomes Policy: The government instituted a very restrictive incomes policy with prohibitive taxes imposed on wage increases above an index, thus implying a sharp and continuous drop in real wages. The "freeze" on wages together with the fixed exchange rate provided two nominal "anchors" for the stabilization program.

Price Policy: Coal and energy price increases (of 400–600 percent) were coupled with removal of most the remaining price controls on January 1, 1990. By the end of the month no more than 10 percent of prices were still subject to administrative controls, a remarkable drop from 50 percent in 1989. The massive increase in energy prices was particularly painful; it contributed to quadrupling of the monthly inflation rate between 1989 and 1990. It was necessary, however, to cut subsidies and eliminate a major market distortion in the form of the undervaluation of coal and energy. (In December 1989, for example, the domestic price of coal was 10 percent of the corresponding international price). Although the price liberalization should essentially be regarded as an institutional reform, it had a strong stabilization impact,

because it contributed, along with the wage freeze, to a rapid elimination of excess liquidity, helping to restore the fundamental market equilibrium.

The stabilization program was immediately supported by three categories of external financial assistance totalling close to \$4 billion. First, the IMF provided a stand-by credit for balance of payments assistance. Second, the OECD countries (the G-24) provided a billion dollar stabilization fund to support the convertibility of the zloty. Third, the EC countries offered humanitarian and food assistance, supplying Poland with meat, grain, butter, edible oils, and medicines.

Poland also obtained access to World Bank credits for food processing, energy-saving and export-oriented projects, and concluded a number of agreements with Western countries on bilateral financial and technical assistance in management and marketing training, banking services, and institutional support.

Such drastic measures could probably only have been taken in Poland's unique political circumstances, where popular enthusiasm in the wake of the end of communist rule made such harsh measures politically and socially feasible for the Mazowiecki government.

INSTITUTIONAL CHANGE

The Mazowiecki government started with three types of broad initiatives: foreign sector liberalization, large scale privatization of the state sector, and introduction of market institutions and mechanisms.

First, the government largely liberalized trade and foreign exchange regimes. The reform eliminated the few remaining elements of the state monopoly on foreign trade, and allowed virtually unrestricted access to foreign trade activities for all economic agents. No licenses are required for foreign trade (except in restricted materials), and most quantitative restrictions have been removed. Administrative allocation of foreign exchange has been replaced by free access to convertible currencies through the banking system.

The government declared that it would privatize as quickly as possible a large number of state-owned enterprises in order to strengthen significantly the private sector, which now accounted for some 8 percent of industrial output. The law on privatization was eventually approved by the Sejm in July 1990 after long and heated debate.

The ambitious task of transforming the Polish economy into a market system within few years is probably much more demanding and difficult endeavor than the "big bang" stabilization program. There are no precedents for such a sweeping transformation, and many potential political or social obstacles.

EARLY RESULTS OF REFORM

The Polish reform program worked surprisingly well on the financial side, but not as well on the real side of the economy. The financial successes of the reform program have been achieved at much higher economic and social costs than were necessary.

The main goal of the stabilization effort was to eliminate hyperinflation, and it was successful. After a 78.6 percent jump in the inflation rate in January 1990 (the largest in

postwar history), the rate subsided to a monthly rate of about 3.5 percent by July; the annual rate fell from about 3,600 percent in 1989 to an annual average of 586 percent in 1990.

The drop in the inflation rate was indeed remarkable, particularly because it was coupled with the elimination of "repressed" inflation, which added further impetus to upward price pressures. Two points, however, deserve further examination. First, inflation has obviously not disappeared altogether, indicating that some fundamental sources of inflation have not been eliminated. Second, price stabilization has been achieved at higher nominal price levels than originally planned.

Despite these reservations, as of mid-1990 improvement was clearly visible. The slowdown of inflation together with the practical elimination of "excess liquidity" turned the Polish economy from "resource constrained" to "demand constrained" almost overnight. Another tentative success has been the dramatic change in the central budget, which has gone from a deficit to a surplus of between 10 and 13 percent of revenues, or about 3 percent of GDP. Incomes policy was quite successful at keeping wages and salaries under control and within limits established by the restrictive excess-wage tax scheme. Real wages actually declined by 35 percent between January and June 1990; however, inflation also reduced the real value of savings by some 45 percent.

Restrictive monetary and incomes policies allowed the foreign exchange market to stabilize during the first phase of the reform program, and to maintain the rate established initially. The foreign trade balance improved dramatically in the first half of 1990. The trade surplus with convertible currency countries exceeded \$2 billion; similarly, the surplus with transferable ruble (CMEA) area reached about \$3 billion at the official transferable ruble rate. The resulting increase of reserves by almost \$1.4 billion was perhaps the most unexpected outcome of the program. The stabilization assumed a decline in international reserves over the first two quarters.

On the real side of the economy, the most troubling outcome of the stabilization program was the deep recession, manifesting itself in the decline of output by roughly 29 percent compared with the corresponding period in 1989. Even if the decline in real consumption was not so drastic, the fact remains that the recession is much deeper and longer than expected (the stabilization program assumed a decline of output of only 5 percent in 1990). Also, the level of unemployment was gradually rising, reaching 5.4 percent of the total labor force in July 1990.³

One of the most disturbing problems during the first phase of the program was the slow pace of institutional change. Except for price and foreign trade liberalization, neither reform has been completed yet. The privatization of state-owned enterprises may yet take off (the law on privatization was approved by the Sejm only in July 1990) but the process will be difficult and will take many years. State monopolies are still financially strong and politically powerful. The banking system is underdeveloped, and no capital market has been established. The delay in institutional reform and the rupture of the necessary synchronization between institutional and stabilization components pose a great danger for the whole program, because financial restrictions do not lead to required changes in the economic structure.

³ *Editors' note:* Formally registered unemployment climbed to some 10 percent of the work force by September 1991. These data may not capture some growth in employment in the private sector.

The implementation of the program has substantially changed the economic environment of agriculture. The liberalization of agricultural prices (for inputs and outputs) in 1989 allowed windfall profits for farmers; but the recovery was short-lived and ended at the beginning of 1990. Demand for food declined sharply, as real incomes went down by 35 percent (even though the share of food in total household expenditures increased from about 41 percent in 1989 to some 55 percent by June 1990). For the first time in postwar history food production hit the effective demand ceiling. On the supply side, costs of inputs, produced and supplied by monopolistic state companies, increased more than prices for finished products, reducing real farm income. Credit conditions in agriculture deteriorated when the government switched to a policy of positive real interest rates in January 1990. Because of seasonal production cycles farmers have to finance their expenses with short-term credits; high interest rates in early 1990 (36 percent in January, 20 percent in February, and 4–10 percent in March-June 1990) were particularly painful for farmers. On the positive side, however, prices stabilized and major shortages of agricultural inputs declined.

The reaction of private farms to the change in economic conditions has been different from the reaction of state enterprises in other sectors. The state companies liquidated excessive stocks, sold their foreign currency deposits, and reduced output, while trying to keep prices high. In contrast, financial resources in the hands of private farms are smaller, and their ability to cut costs and to raise prices is more limited. Restructuring in favor of larger and more efficient farms is difficult, since no financing for small farm buy-outs and consolidation is available, and rising unemployment in industry and trade reduces the willingness of the rural population to sell farms and move to urban areas. Traditionally, Polish farmers have been emotionally linked to their land and they are reluctant to sell it. On the other hand, they are not psychologically and financially prepared to face the fact that a small-size farm may not generate enough income to maintain former standards of living.

Against this background it is understandable that the government is strongly criticized for the lack of an appropriate agricultural policy, in particular for ignoring specific structural characteristics of Polish agriculture and for lack of any structural adjustment policy. Strikes and protests by farmers and mounting political tension indicate that the government is coming under pressure to adjust its policy, granting more preferences for private farmers.

UPSTREAM AND DOWNSTREAM SECTORS

In Poland, the upstream and downstream sectors of agricultural production are dominated by big state-owned or cooperative firms. This highly monopolized structure insulates agriculture from market mechanisms already working in other parts of the national economy. Two examples should suffice. First, under central planning only one large cooperative company (Centrala Gminnych Spółdzielni, or CGS) was responsible for supplying production inputs and machinery for farmers. When reform started, it turned out that no other company—public or private—was big enough to establish its own distribution network. Second, purchases and processing of agricultural products (including grain, meat, and dairy products) were a monopoly of powerful state enterprises. Similarly, state monopolies prevailed in services for agriculture. Credits and financing were provided almost exclusively by one bank with a country-wide

network of regional branches. This institutional structure was perhaps logical within the framework of traditional central planning; it is clearly inadequate in a market economy.

INPUTS FOR FARMING

When the government cut subsidies for agricultural inputs and freed prices in January 1990, the main input producers responded in a typical "monopolistic manner." They reduced output and raised prices (input demand declined as well, mostly due to credit restrictions). This monopolistic behavior was possible partly because of lack of effective import competition due to high tariffs and exchange rates. Prices for inputs increased by 170 percent between January and June 1990, whereas at the same time prices for agricultural products increased by only 90 percent. Thus, the "terms of trade" for the agricultural sector deteriorated sharply, and the real purchasing power of the sector declined substantially, as illustrated by table 10-2.

In July 1990 the government suspended many tariffs for agricultural inputs, machinery, and equipment. The results of these measures are still to be seen. Thus, the main effect of the "marketization" was simply the sharp rise in prices, with no significant reaction in terms of quantity and quality of output, at least in the initial stages. The immediate result of the "terms of trade" deterioration was a sharp drop in demand for agricultural inputs. For instance, sales of fertilizer declined by 65 percent in April 1990 as compared with April 1989, and sales of high-protein feedstuff fell by 75 percent in the same period.

Absence of structural adjustment on the supply side may be attributed to the lack of capital in the sector producing inputs for farming, and to the lack of a capital market that would facilitate the transfer of funds from other sectors.

SUBSIDIES AND PROTECTION IN AGRICULTURE

Subsidies have always played an important role in Polish agriculture. In 1989 total subsidies for agricultural production reached 20 percent of all budget expenditures, representing 48 percent of the net product in agriculture, and some 7 percent of GDP. Half of this amount was retail food price subsidies. The structure of agricultural subsidies is presented in table 10-3.

The most significant change in budget policy towards agriculture is perhaps the dramatic drop in subsidies for food prices, and to a lesser extent in subsidies for agricultural inputs. On the other hand, the sharp increase of subsidies for pension funds is a result of the reduction in social security payments by farmers by 30 percent (per capita). Direct subsidies for agricultural production (see table 10-3) included current expenses of state farms and other enterprises providing services to agricultural production. A new component of this amount in 1990 is the cost of preferential credits for agriculture. Responding to pressures from farmers, in March 1990 the government introduced preferential credits for purchases of current inputs for agricultural production, granted for periods of six or nine months, with interest rates of 24 percent and 30 percent respectively, i.e. some 50 percent below market levels. In June 1990 the interest rate for preferential credits was reduced to 16 percent for six months, and the limit for individual loans was raised from 10 million to 20 million zlotys. In July 1990 the government decided to extend low-interest credits for purchases of agricultural products also in an effort to alleviate the emerging oversupply in the agricultural markets. These seasonal credits

Table 10-2. Prices of Selected Inputs in Terms of Quantities of Three Farm Products, 1988-90

Items	1988	1989		1990	
			December	Feb.	April
Feedstuff for pork (M-T2), 1 kg in terms of:					
Rye (kg)	0.91	1.56	2.28	2.20	
Pork meat (kg)	0.11	0.13	0.28	0.24	
Milk (liters)	0.60	0.88	2.63	2.29	
Mineral fertilizer (Polyphosphate), 1 kg in terms of:					
Rye (kg)	0.75	1.27	1.07	1.17	
Pork meat (kg)	0.09	0.12	0.13	0.12	
Milk (liters)	0.50	0.85	1.23	1.22	
Diesel fuel, 1 liter in terms of:					
Rye (kg)	2.07	3.02	2.76	3.04	
Pork meat (kg)	0.24	0.29	0.34	0.31	
Milk (liters)	1.38	2.05	3.20	3.17	
Tractor (C-330M) in terms of:					
Rye (q)	302.8	307.1	139.0	448.0	
Pork meat (q)	35.2	31.5	54.0	46.1	
Milk (thousands of liters)	20.1	22.2	50.6	46.7	

Source: Ministry of Agriculture and Food Economy.

Table 10-3. Subsidies and Other Budget Expenditures for Agricultural and Food Processing Sector, 1989-90 (billions of zlotys)

Item	1989	percent	1990 ^a	percent
Direct subsidies to agriculture	493.1	7.2	2,965.2	16.8
Subsidies to agricultural inputs	1,264.1	18.4	1,968.3	11.2
Subsidies to food prices	3,476.3	50.5	1,873.3	10.6
Investment subsidies in agriculture	328.8	4.8	2,445.0	13.8
Investment subsidies in food industry	30.0	0.4	43.9	0.2
Budget contribution to pension funds	1,288.3	18.4	8,370.5	47.4
TOTAL	6,880.7	100.0	17,666.2	100.0

a. Planned.

Source: Author's computations on the basis of data from the Ministry of Agriculture and Food Economy.

are granted for periods of up to one year, and charged at interest rates of 20 percent (16 percent below market rates). Direct subsidies to agriculture also include budget expenditures connected with the establishment of the Agency for Agricultural Markets, which will be responsible for

intervening in the agricultural market in order to stabilize prices for grain. The Agency will not fix minimum prices or intervene in any other administrative way, but it will affect the price level through purchases or sales of grain.

Subsidies to feedstuffs were discontinued at the beginning of 1990; remaining subsidies included those for mineral fertilizers, chemicals, and irrigation and water supplies. These subsidies do not include border protection measures. The degree of overall financial support for agriculture has clearly declined.

DEMAND FOR FOOD AND THE FOOD PROCESSING INDUSTRY

The food market in Poland in recent history has been marked by chronic excess demand. Farmers could always be sure that their output would be purchased by state procurement companies at prices fixed by the authorities every July. The level of procurement prices guaranteed profitability for private farms, and maintained farmers' incomes at the level of the average earnings of the urban population, in keeping with the income-parity principle. Procurement prices were typically increased in response to increased prices for inputs.

Price setting provided a relatively stable economic environment for private farming. The stability broke down when the government lifted price controls and withdrew its commitment to purchase all output. Procurement companies have become independent units, following their own economic strategy. They may now reduce purchases in order to optimize stocks, and they may also maximize profits by keeping procurement prices as low as possible and raising the prices of their own commodities.

Demand for food declined sharply as a result of the fall in real incomes. The fall in real incomes of the population by 35 percent between January and July 1990 was accompanied by a relative increase of food's share of household expenditures from 45 percent to between 50 and 60 percent, depending on the social group. As a result, food consumption in the same period declined 10–15 percent compared with the first half of 1989. More precise estimates are difficult to obtain, as a growing proportion of food is purchased in the blossoming "parallel" market (bazaars, private supplies, etc.), which is not statistically observed. The decline in consumption is most severe in the case of meat and meat products (which fell 25–20 percent, partly because meat price increases were the highest), and is less pronounced for milk and dairy products (which fell 15–30 percent). The decline in the derived demand for raw agricultural products was deeper than for final processed goods.

To what extent is the observed drop in food consumption a short-term phenomenon, connected with the temporary fall in real incomes? Does it reflect a structural change in consumption patterns (which in Poland were always biased toward relatively excessive food consumption)? According to some forecasts, in the long run "the food demand in Poland will be mainly driven by population growth," which may indicate that the rate of growth of demand for food will not surpass 1 percent per annum (Dethier and Plewa 1990). If this is correct, it would mean a major change in the economic environment for agriculture, as the supply-constrained, highly controlled quasi-market will evolve into a demand-constrained, deregulated, competitive market. Increases in the retail-farm price spread due to better processing and marketing may further reduce the derived demand for farm products.

Any adjustment in agricultural processing and marketing costs and prices will be difficult. The food processing industry, the main single customer for food producers, is technically obsolete and financially decapitalized. During good harvests the industry was not able to buy and process all supplies. Credit restrictions and high interest rates made the situation even worse. Many food processing companies were in serious financial trouble at the beginning of 1990. Because of the seasonal nature of their production, processing enterprises have to rely extensively on short-term credits, which became extremely expensive. Since the firms were in most cases monopolies, their first reaction was to raise prices, thus reducing demand even further. While agricultural output remained roughly at the same level as in 1989, production in agroindustrial branches has declined by one-third in 1990.

One of the solutions to this problem will come from the privatization of food processing enterprises. Privatization may create a competitive and flexible environment for farms, providing them with better market opportunities. The process of privatization has so far been concentrated in selected areas (meat processing, fruit and vegetable processing, and bakeries), and has included only small enterprises. Moreover, new private companies, sometimes with foreign capital participation, are entering in the food processing sector. More than 2,000 were established in 1989 and 1990, among them 300 joint venture companies. As a result of this, the share of big, state-owned companies in food processing declined from 60 percent in 1988 to 50 percent in 1990. Additional stimulus for public companies to go private or to restructure may come from the reduction of subsidies for food processing activities. In 1989 subsidies for the food processing sector were 32 percent of the industry's total revenues. In the first quarter of 1990 this figure dropped to 3.6 percent.

EXPORTS OF AGRICULTURAL AND FOOD PRODUCTS

Exports provide a means of agricultural expansion under conditions of limited or declining domestic demand. In the past, exports of agricultural products from Poland fell into two categories. Excess supplies of some products, such as potatoes, apples, powdered milk, and casein, were exported, often at prices far below production cost. Second, Poland has traditionally exported selected high-quality foodstuffs, such as ham, bacon, and some processed vegetables, to developed market economies. Exports accounted for most of domestic production of these high quality items. For example, in 1989 exports accounted for 85 percent of the production of canned hams, 70 percent of horse meat, 63 percent of slaughter lambs, 72 percent of frozen vegetables and fruits, and 32 percent of bacon. In general, however, agricultural exports were regarded as a residual benefit rather than as a goal, and therefore no consistent policy of agricultural export promotion has been followed.

Nonetheless, agriculture's share of exports to developed market economies has been substantial. In the 1980s, agricultural and food exports accounted for between 18 percent and 20 percent of total convertible currency exports, and amounted roughly to \$1 billion per year. Hard currency countries accounted for some 70–75 percent of the Polish agricultural exports, and in the first five months of 1990 the trade surplus increased compared with the same period in 1989. This was due both to an increase in exports and a sharp decrease in imports. The EC countries were the most important single market, buying more than 50 percent of Polish agricultural exports. Exports to CMEA countries in the first half of 1990 declined slightly, but

imports from those countries declined by about 50 percent compared with the same period in 1989.

As a percentage of the total output of the agricultural and food processing sectors in Poland, exports are small, however. They comprised 5–6 percent of total output in the 1980s. Because of the drop in domestic demand, the proportion of exports increased to about 7.2 percent in 1990. The key issue is to determine the policy objectives and rules for agricultural exports in the longer run. It is likely that technical modernization and privatization of food processing industries would greatly improve the competitiveness of Polish agricultural exports in West European markets. In view of the likely slow growth of domestic demand, agricultural exports will probably be critical to the prosperity of Polish agriculture (Knudsen 1990). Any policy choice in this area depends not only on domestic conditions; the external environment, especially the degree of protectionism in the EC and other developed countries, is a major factor. Poland was granted GSP status by the EC and the US in 1990, which reduced tariff rates on Polish agricultural exports to those areas by about 50 percent. Quantitative restrictions remain in force, and because they are shared with other food and agricultural exporters, competition may effectively limit export possibilities for the Polish farming sector.

Devaluation also improved the profitability of agricultural exports. Until 1989 agricultural exports were heavily subsidized at the average rate of 30 percent (67 percent of exports to convertible currency areas were subsidized). The situation changed radically in the last quarter of 1989 and first quarter of 1990, because of both the deep devaluation of the zloty and the decline in domestic demand. These factors made exports more profitable. As a result, domestic prices of the majority of products, converted at the new exchange rate, became competitive with corresponding prices in the EC market, although the quality of particular products is not fully comparable. Table 10-4 compares domestic prices of selected commodities in several European countries.

Agricultural trade is still dominated by large state-owned trading companies that accounted for 84 percent of imports and 77 percent of exports in 1989. The role of the private sector is rapidly growing. No formal licenses are required to enter international markets for agricultural and food products, and trade regulations have been liberalized and streamlined. Since July 1, 1990, almost all agricultural inputs and products are free from import duties.

The increased profitability of exports allowed radical cuts in export subsidies in 1990. The effect may best be illustrated by a particular commodity, such as pork (see table 10-5). After the devaluation of the zloty by 46 percent in January 1990, procurement prices in the domestic market dropped to about 50 percent of export prices. Exchange rate policy, although important, will not be sufficient to assure international competitiveness of Polish agriculture. A larger package of institutional changes, coupled with selected interventionist measures is needed in order to stimulate structural and technological transformation in agriculture.

The institutional framework and marketing conditions for agriculture in Poland are still distorted. For private farmers, options for adjustment are limited in the short run because of

Table 10-4. Domestic Prices of Selected Commodities in Six European Countries, April 1990
(thousands of zlotys)

<i>Product</i>	<i>Belgium</i>	<i>Denmark</i>	<i>Portugal</i>	<i>FRG</i>	<i>UK</i>	<i>Poland</i>
Sugar (kg)	9.3	20.6	9.0	10.1	13.6	4.9
Butter (0.25 kg)	59.0	64.0	53.0	11.0	43.5	2.2
Beef (kg)	64.3	269.2	94.0	105.0	91.2	18.6
Pork ham (kg)	80.4	242.9	119.2	132.3	91.9	46.5
Pork meat (kg)	13.4	16.7	17.3	15.2	—	8.4
Wheat (metric ton)	2,200.9	2,262.5	—	—	1,606.8	708.3

— Not available.

Note: Converted into zlotys at the rate of Zl 9,500 per U.S. dollar.

Source: Ministry of Finance.

Table 10-5. Export Profitability and Subsidies for Pork Carcasses, Selected Years
(percent)

<i>Item</i>	<i>1987</i>	<i>1989</i>	<i>1990^a</i>
Domestic price	100.0	100.0	100.0
<i>of which:</i>			
Farm gate price	60.8	67.7	77.7
Marketing margin	39.2	32.3	22.3
Border price ^b	92.8	83.7	109.8
Net export subsidy	+7.2	+16.8	-9.8

a. First three quarters.

b. Export transaction price converted at official exchange rate.

Source: Author's calculations from data supplied by Institute of Agricultural and Food Economics, Warsaw.

the highly unfavorable agrarian structure and the dominance of state monopolies in downstream and upstream sectors, particularly in the food processing industry. Demand for agricultural products has contracted. Deep structural change is necessary; however, serious constraints on this process are imposed by growing urban unemployment, low labor mobility, and lack of capital held by the rural population.

Relative to average incomes, food is expensive in Poland, but relative to non-food prices, it is cheap. At the same time farm output prices are too low to secure parity income level for farmers. This is the immediate cause of the current agricultural crisis in Poland. Because of the relatively high share of agriculture in the Polish economy, the success of reform in the agricultural sector is of crucial importance in the overall transition to a market economy. The need for selective and cautious government intervention is commonly recognized. But it should neither disturb emerging market forces nor give the bureaucracy another chance to regain control over the economy. The optimal degree of intervention and support may be still difficult to determine, since Polish agriculture is struggling with a peculiar dilemma. The country faces some problems typical of developed market economies, such as a food surplus, yet it has to deal with a lack of capital and a poor infrastructure, both more common to developing economies.

REFERENCES

IMF. 1990. *IMF Survey* 19(4).

Knudsen, O. 1990. "The Macroeconomy and Agricultural Adjustment in Poland." In L. Garbus, A. Pritchard, and O. Knudsen, eds., *Agricultural Issues in the 1990s*. Washington, D. C.: The World Bank.

Rosati, D. K. 1990. "Institutional and Policy Framework for Foreign Economic Relations in Poland," in *Reforms in Foreign Economic Relations of Eastern Europe and the Soviet Union*. New York: U.N. Economic Commission for Europe.

HUNGARY

Editors' Note: Hungary was at the forefront of attempts to reform and improve the performance of the socialist system of agriculture. The abolition of compulsory targets in the early 1960s, a pragmatic approach toward household and private agriculture, and the large degree of autonomy on Hungarian farms were features used in designing reforms in other socialist countries, including China. The reform process of the 1980s created the conditions for a smooth political transition and for a faster move toward a real market. The most important general features of this change are discussed by Marton Tardos.

Agriculture is an important sector of the Hungarian national economy, and it performed with relative success even under socialism. Its transformation has great economic and political importance for the future. Csaba Csaki and Gyula Varga's paper summarizes the relevant historical background and gives a detailed account of the first phase of the process of creating a market-based agricultural system in Hungary; the paper covers developments through early 1991. The authors discuss the new agricultural policy as well as tasks of the agricultural transition already initiated, such as price liberalization, subsidy reduction, settlement of land ownership, liberalization of foreign trade, and decentralization of food processing. Further steps, such as reform of the cooperatives and privatization of state farms are also outlined. This chapter also includes a paper by Balazs Szelenyi and Ivan Szelenyi on the social impact of changes in Hungarian agriculture.

A BRIEF REVIEW OF THE INHERITED AGRICULTURAL SYSTEM AND ISSUES OF THE TRANSITION

*Marton Tardos**

After the suppression of the 1956 revolution, Hungary embarked upon a series of peculiar self-perpetuating experiments that led to economic reform in 1968. The new economic mechanism (NEM) became a kind of modified central planning, the main characteristics of which were: (a) the command economy was renounced to the extent possible under retention of a one-party dictatorship; (b) firms became profit-oriented; (c) state, cooperative, and subsidiary (quasi-private) firms engaged in limited competition; (d) strict central control of prices was modified; (e) supply and demand had some influence on the flow of commodities; (f) the economy became more open; and (g) workers participated in management. Markets were allowed to affect the flow of commodities, but capital and labor remained centrally controlled. The Hungarian model created a market.

The innovations of the NEM improved the efficiency of the economy and relieved some shortages, but they were not an unequivocal success. Western reactions were favorable. Many considered the Hungarian innovations to be the maximum allowable, given political and geographic constraints. The changes in Hungary were perceived to offer important examples

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of changes possible in other socialist countries. Finally, the Hungarian model offered the possibility that economic conditions could improve without threatening political and military stability.

Today we know why the success was not total: a "market economy" cannot operate efficiently under communist rule. The limited competition of the NEM was not enough. Well-functioning markets require generalized competition between and among firms and conflicts of labor and capital. Because competition must be general and encompass divergent political and social interests, political and social pluralism is an indispensable precondition for an efficient market.

Conflicts between the requirements of the market system and the inherited communist political structure led to grave paralysis of the Hungarian economy after the unexpected collapse of the Soviet model. The weakness of the inherited economy creates many dilemmas for the transition. Production and infrastructural capacities are outmoded. The financial system created under the NEM is totally disorganized and cannot exert the necessary discipline on economic agents. Entrepreneurship is not strong enough to lay the foundations for economic development. Finally, there is a huge gap between the expectations of the population and the ability of the economy to produce.

Agriculture is held to be one of the more successful areas of the NEM. No Hungarian industry is so close in its performance to the technical standards of developed economies as is agriculture. The success is due to a skillful combination of the large corn-producing farms and the small animal feeding and horticultural farms. As a result, the supply of food in Hungary is good. Even the agricultural success of the NEM was partial, however. Considering the quantity of materials, capital, and labor used in production, the results are not so convincing.

Large farms use too much material and capital. Small farms use too much labor. Without government subsidies there would be little market for Hungarian agricultural products either at home or abroad. The government, however, has little money for subsidies.

THE TRANSITION

The unexpected collapse of the Soviet system brought a reconstruction of Hungarian society in a historically short time. The parliamentary elections of spring 1970, followed in the fall by local council elections, created the foundations of a democratic political system. As one of its first measures, the parliament adopted the new constitution of the country, and thereby created the necessary legal framework for politics.

The situation is more complicated in the economy. A functioning market is possible only if the government can reach agreement with social strata adversely affected by the transition and can devise a successful economic program of privatization and stabilization.

THE MONETARY SYSTEM AND CAPITAL MARKETS

Monetary flows in the early period of the transition were poorly controlled. The state overspent its budget, both in open and hidden transactions. The National Bank of Hungary maintained a restrictive monetary policy that had limited impact because state enterprises (relatively unconcerned about liquidity and the erosion of their assets) created credit. Credit creation at the enterprise level resulted from lax discipline on the part of the nominal owner, the

state, and the absence of bankruptcy as a credible threat. The remedy for these problems is three-fold: reduce the budget deficit, revalue assets in state enterprises, require payment of dividends, and introduce and enforce bankruptcy law.

When the NEM was introduced in Hungary in 1968, it was assumed that autonomy of enterprises in product markets could be assured even if the allocation of capital remained centrally controlled. The most important institution of capital allocation was the state mono-bank.

The contradictions of the system resulted in significant problems. To ease the tensions, a bond market started to operate in 1983. In 1987, a two-tier banking system was introduced. The issue and trade of different securities (bonds, stocks, certificates) began at the same time. In 1990, 350 share companies were operating and the value of market capitalization was over 200 billion¹ forints (about 10 percent of the book value of business assets in Hungary).

Traded certificates comprised a negligible share of total investment. Most of the trading with certificates was "over the counter," with approximately 5 percent of the trading volume located in the Stock Exchange Meeting, the predecessor to the Hungarian Stock Exchange.

THE OPTIONS FOR PRIVATIZATION

Direct Distribution of Shares. Initially it seemed that the most ethical solution for the privatization of nationalized state capital was distribution of shares among citizens. Yet in practice, this option creates insurmountable difficulties. The value of property (the discounted present value of the profit yielded by it) is unknown and estimates are very inaccurate. It would, therefore, be very difficult to design a distribution that assigned ownership to individuals in an equitable manner.

The distribution of assets among a firm's employees is another possible solution. Some suggest that the distributed share be weighted according to the position held by the recipient. Managers would thus receive more than ordinary clerks. This option is likely to generate even more injustice than widespread distribution. Employees of the infrastructural sector, which will remain publicly owned, would be excluded from reprivatization. Would people who work in capital-intensive plants receive a larger share than those engaged in labor-intensive activity? Most proposals for privatization raise similar difficult questions. Administrative privatization could bring instability to the extent that, in the short run, the harm would exceed the benefits one could expect from quick transfer of property rights.

Gradual Direct Reprivatization. Gradual direct transfer of ownership through sale to individuals would take at least 15–20 years. There is only limited demand from foreign buyers, and domestic buyers lack capital. Smaller firms and commercial and service units could be sold quickly, but larger enterprises would require more time.

State enterprises that cannot be sold quickly should, according to proponents of this approach, be commercialized, or reorganized to perform according to sound business norms. The transfer of ownership could then take place gradually according to use of general alternative schemes.

¹ A billion is 1,000 million.

The state could resign its managerial rights to new owners if the latter have bought more than 20 percent of the capital of the company and both parties agree on how to sell the remaining part of the capital. Alternatively, the state could participate in management of the gradually reprivatized enterprise as a copartner and create business institutions to support this activity (Kotz 1986). The state could offer special shares to customers who would pay off the value of the property by transferring retained dividends to the state. They would become full owners after amortization of the debt. Under this solution, the state's managerial role could be either active or passive (Asztalos 1988).

Deposit of State Capital into Investment Trusts. Management of the state-owned enterprises could remain the task of the Ministry of Finance, but it could alternatively be transferred to an investment fund (Matolcsy 1989). The latter could be directed, for example, by a board of trustees elected by the parliament. Under this arrangement, the state administration would have responsibility for finding new owners, but the investment fund would manage enterprises in the interim. Efforts would have to be made to protect the investment fund from political manipulation.

Transfer of the State Capital to Foundations, Insurance, Companies, and Pension Funds. In developed Western capitalist countries, a large part of the business capital is owned by foundations, municipalities, and pension funds (Tardos 1988). These institutions exist in Hungary, as well, but their activities are badly managed and undercapitalized. They, too, are victims of the past nationalization, since the private capital that sustained them was eliminated. A large part of the state business capital could be transferred to them after appropriate decentralization. Not only would this provide a security for their independent activities, but it would also establish a nationwide capital market. This option could be part of a solution, but should not stand alone. The relatively high risk aversion of the funds and the limited risk-taking possibilities (both caused by regulation in even the most liberal market economies) decrease the chance of success. The importance of these financial intermediaries suggests that they should be included in the design of Hungary's transfer of ownership.

CONCLUSION

The complicated task of transformation evokes a plethora of unavoidable passions. The success of the transformation depends not only on the technical characteristics of options chosen, but perhaps more importantly on firm social support.

REFERENCES

- Asztalos, L. G. 1988. "Blinking Yellow Light in the Tunnel." (mimeo) Biztosító Kutató Csoport.
- Kotz, L. 1986. "Változatok a részvényre." *Tervgazdasági Forum*, no. 4.
- Matolcsy, G. 1989. "Vázlatok a tulajdonreformra." *Gazdaság*, no. 4.

_____. 1989. *Reform of Ownership*, in L. Lengyel, ed., *Pénzügy-kutató Rt.*

Tardos, Marton. 1988. "Gazdasági szervezetek és tulajdon." *Gazdaság*, no. 3.

ECONOMIC DIMENSIONS

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Hungary's agricultural sector on the eve of the transition was in many important dimensions relatively strong. Hungarian net exports of agricultural products throughout much of the period between 1960 and 1990 were among the highest in the world on a per capita basis, and agriculture contributed approximately 20 percent of total exports. Hungarian export performance can be contrasted with the deteriorating agricultural trade balances of Bulgaria and Romania, traditionally the two other Central and Eastern European net exporters. Moreover, Hungarian exports were achieved as domestic consumption increased. Hungarians enjoyed access to the best food supply in Eastern Europe, despite occasional shortages of some (primarily high quality) products.

The ability to offer growing quantities of food to domestic and foreign customers came from notable growth in the volume of agricultural output. Between 1960 and 1990 Hungarian agricultural output grew by 80 percent. This contributed to Hungary's economic performance in general; agricultural production accounts for approximately one-fifth of national income, and employs 11 percent of the labor force. The abundance of food in domestic markets meant that Hungary avoided the severe shortages common in other countries, and the country was spared much of the distortion of consumer markets for food, deterioration of its domestic currency, and severe monetary overhang. Hungary did not turn to world markets for costly food imports, and much Hungarian food sold for hard currency even among CMEA trading partners.

Paradoxically, the quantitative growth weakened and benefited the economy in equally important ways. The weaknesses, as well as strengths, formed the initial conditions of Hungary's transition and continue to shape the path of adjustment.

The quantitative growth of Hungarian agriculture was achieved with a price structure insulated from world prices by state trading, an inconvertible currency, and subsidies. Producer prices for livestock products exceeded world trading prices by approximately one-third when direct and indirect subsidies are included in calculation of the producer subsidy equivalent (table 11-1). Consumer prices showed more movement than in other Central and Eastern European countries where state control of retail prices was more extensive, but Hungarian consumers were offered many food products at prices lower than the costs of delivery. The difference was passed to the state budget.

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Table 11-1. Selected Agricultural Producer Subsidy Equivalents in Hungary, 1984-89

Description	1984	1985	1986	1987	1988	1989
<i>Agricultural Products</i>						
Wheat	-89	-85	-70	-40	-36	-60
Maize	-56	-63	-52	-21	-15	-39
Sunflower seed	-23	-28	-21	2	5	-9
Milk	-20	-19	-8	3	7	4
Cattle for slaughter	17	27	37	38	32	21
Pigs for slaughter	-3	7	20	28	31	25
Sheep for slaughter	15	19	24	31	28	22
Average for agricultural products	-31	-28	-16	1	5	-7
<i>Food Industry Products</i>						
Sunflower oil	-13	-26	-20	13	30	23
Sugar	34	47	48	60	58	49
White cream cheese	26	29	32	31	34	19
4/4 beef	27	35	43	46	44	36
Split sides of pork	25	30	35	38	39	36
Mutton	10	11	9	17	15	16
Broiler chicken	29	29	29	34	41	40
Average for food industry products	25	29	33	40	42	36
Average for all products	-12	-9	0	14	17	6

Source: Borszékai, Mészáros, and Spitalszky 1990.

Quantitative growth in agriculture was not matched by corresponding improvement in quality; and the lag in quality is a second major flaw of the inherited agricultural system. Agricultural producers were able to offer increasing quantities of livestock products, wines, fruits, vegetables, and specialty products, but processors could not transform these raw materials efficiently into sophisticated specialty foods with appeal in increasingly competitive export markets (where specialty foods were subject to fewer trade restrictions). Hungarian exports thus incorporated less value added than desirable. The relative backwardness of food processing is evident in the high producer subsidy equivalents for processed products (table 11-1). This situation was exacerbated in the late 1980s when weak international commodity prices and Hungary's high foreign debt further delayed modernization of agricultural processing.²

Quantitative growth not matched by qualitative improvement characterizes the checkered history of Hungary's postwar agriculture, and dictates the challenges of the transition. The agricultural legacy was apparent, in mid-1990, in the oversupply of food on the domestic market. The removal of consumer price subsidies has reduced domestic demand for food, and the surplus is not readily rechanneled into international trade. Hungary has had considerable success in achieving increased access to West European markets. Reduced domestic demand and a near total collapse of shipments to the USSR in 1990, however, have brought the latent weakness of the pre-transition agricultural economy into the open with oversupply of hogs and milk and a significant weakening of meat prices.

Weakness in the inherited agricultural sector was apparent before the transition brought it into sharp focus. In the late 1980s, employment in agriculture declined as income disparities rose. Export competitiveness deteriorated, and the subsidies needed to move Hungarian meat onto international markets increased. These subsidies resulted in part from domestic pricing policies, and in part from distortions in international commodity markets. The growing export subsidies for meat and the paucity of other earnings with which to defray the external debt highlight the opportunity cost of past investments in less than fully competitive agricultural capacity.

INITIAL CONDITIONS: THE RECORD OF PARTIAL REFORMS 1950-88

The strengths and weaknesses of Hungary's agriculture result from policies initiated in the late 1950s and modified throughout the next three decades. Hungary's agriculture was fully collectivized in three waves between 1950 and 1961. In the mid-1960s cooperative and state farms were released from many of the strictures of central control that hobbled collectivized agriculture in other countries of the region. Quotas for delivery of output were dropped, and farms were given autonomy to decide what to produce. With relaxation of output quotas, flexibility in marketing of inputs and output became important, and market relations replaced directed flows.

The greater autonomy of cooperative members and managers (of both cooperative and state farms) allowed them to redefine the boundaries between public and private, always within given constraints on ownership. Table 11-2 gives an overview of pre-transition farming

² For discussion of the impact of external indebtedness on structural change in agriculture, see Csendes 1989 and Varga 1988.

structures. Between 1970 and 1987, a growing private sector developed based on household auxiliary plots, leased land, and contractual relations. The proliferation of rentals, leaseholds, and contractual links between the cooperative and private sectors provided more fluidity in land use than in other collectivized countries.

Table 11-2. Structure of Hungarian Agricultural Organizations, Selected Statistics, 1987

Organization	Number	Average Number of Employees	Average Size (ha)	Average Value of Assets (million Ft)
State farms	131	1,013	6,947	567
Agricultural cooperatives	1,253	431	4,052	153
Cooperative joint ventures	60	140	36	134
Special agricultural cooperatives	60	259	1,562	77
Household and auxiliary farms (estimated)	1,400,000	—	.5	—

— Not available

Source: *A mezőgazdasági...1988.*

Although land transactions were always limited by the preponderance of cooperative farms, markets in user's rights were more active in Hungary than elsewhere. Active markets for inputs and outputs made the acquisition of user's rights attractive to many small-scale producers. The part- or full-time producers operated on the periphery of the cooperative sector and maintained apparently benign relations with the large farms rarely reported in other dualistic structures of socialist agriculture.

The reforms of the late 1960s gave a high degree of autonomy to primary producers, but failed to create a competitive environment in which they could function. Markets were not fully controlled, but neither were they competitive. The state continued to control prices, and to interject wedges in the form of subsidies and taxes in transactions between economic agents. Agricultural imports and exports remained a state monopoly. The important role of foreign trade in promoting competitive behavior in small economies was stymied, both by the state trade monopoly and the inconvertibility of the forint. Although cooperative farms had relative autonomy in productive decisions, their autonomy did not extend to entry and exit. Policies of financial intervention through wage control, taxation, and credit policy protected some farms and penalized others, redistributing income from the better performers to the worse. Although cooperative farms invested in processing capacity, particularly in feed mixing, pasta production,

and distillation of wine and champagne, much food processing remained in state monopolies under little pressure to serve either consumers or producers well. Small-scale industry and service activities provided additional economic strength in rural areas.

The net effect of this hybrid system, neither plan nor market in the classical sense (but with elements of each), was an agricultural regime that promoted quantitative growth and inhibited improvements in quality and efficiency. The system functioned well in the 1960s and 1970s when quantitative growth was an acceptable objective, and when other CMEA countries experienced increasing difficulty maintaining growth. In the 1980s, however, changes in domestic and foreign markets raised the importance of qualitative improvement and efficiency, and the system of "neither plan nor market" proved weak in adaptiveness (see Csaki 1983).

AGRICULTURE AND THE POLITICS OF THE TRANSITION

In Hungary, as in other formerly socialist countries in transition, agriculture has a political importance greater than an outside observer (attentive only to economic priorities) would argue is due. This political importance has several sources. One is the politicization of food and food prices in the decades of socialism, evidenced by the reluctance to remove food subsidies even as their burden became progressively greater. A second factor is the prevalence, particularly in Hungary, of part-time private agricultural activity. The shortage of urban housing has created a large group of commuters with primary employment in urban jobs, but who live in rural areas and engage seriously in part-time farming (Szelenyi 1988). The number of people who receive income from agriculture is thus greater than the 11 percent of the labor force formally employed in the sector. Moreover, as unemployment rises through closure of nonviable industrial plants, many more people will seek to become part-time farmers, or to expand their operations. The political impact of rising unemployment thus depends in part on the absorptive capacity of small-scale agriculture.

A third factor that elevates the political importance of agriculture is the very sensitive issue of land ownership, and the fact that the foundations of a solution to land ownership must be laid by the political process, through laws defining property rights and guiding their transfer. The group of people directly affected by the definition of landowners' rights is larger than those employed in agriculture.

For all these reasons, the agricultural transition is a fusion of political and economic processes. In Hungary the complex politics of the land issue has slowed economic change. The costs of political contention and delay are apparent in the decline in agricultural investment in 1990, uncertainty regarding farm structure and ownership and a likely fall in output. The contention and delay, however costly, can be seen as an investment in political sustainability of the transition in the long run. Issues of fairness, ownership, and compensation are complex and were suppressed for many decades, and it is unrealistic to expect that they would be raised and settled quickly and sustainably. Lengthy debate, slow progress, and careful consideration entail current costs, but may prevent the much more costly popular rejection or reversal of the outcome in the future.

This political importance creates an agenda for agriculture during the transition broader than the task of economic restructuring. This agenda can, furthermore, inhibit direct pursuit of improvement in efficiency and quality, the primary economic objectives of the transition. When

trade-offs between economic and political objectives are necessary, the compromises should be forged in a way as consistent as possible with the longer-term goals of agricultural restructuring. The areas in which politics will most likely shape economic outcomes are employment, foreign trade, land ownership, and domestic food supply and pricing.

Labor markets will naturally channel some low-wage labor into construction and labor-intensive agricultural operations. The current excess food supply, however, will limit the natural flow of labor into primary agricultural production in the near term. Political inducements to employ more than the natural flow of workers in agriculture, through subsidies and delayed closure of bankrupt farms, may be less desirable than alternatives such as public works programs and public investment in rural development.

Hungary's \$20 billion³ foreign debt places a clear political constraint on the sector's economic restructuring. Unless significant debt relief can be negotiated, Hungary will have to continue subsidizing some uneconomic agricultural exports simply to service the debt. Agriculture's prominence in the current account reflects the weakness of other sectors as much as it shows agriculture's competitive strength, particularly since recent meat exports have been achieved with increasing subsidies. The sector's past pride in export successes may come to haunt it, as the restructuring necessary to achieve competitiveness is postponed in favor of maintaining current export earnings. Export sales to Western Europe in 1990 were the largest ever, but were offset by the collapse of trade with the USSR (see table 11-3).

The political nature of the land question has already been addressed. Until the political process establishes a legal basis for property ownership, the economic process of restructuring farms into new units cannot proceed. The political and legal framework will be important, but much will also depend on how individuals choose to use the framework and rules established.

The past politicization of food prices and the high proportion of food in household expenditures (27.7 percent in 1988) makes the liberalization of food prices politically sensitive. In Hungary this issue is somewhat less critical than in other countries, since the lack of excess demand at the time of liberalization muted the price increases and current excess supply further restrains them. Producers' response to excess supply is already apparent; purchases of fertilizer declined between 25 and 30 percent in early 1990. Reduced demand for inputs, plus low investment associated with uncertainty about property rights, will bring down production in the near future.

This will not threaten domestic food supply, since demand is already down, unless exports are artificially maintained for debt service. Other Central and Eastern European countries in transition have absorbed greater increases in food prices than are likely in Hungary, indicating that liberalization may be less volatile than feared a priori. The context in which price increases occur appears to be important. When consumers view food price increases as part of a coherent program of economic change that has both domestic and foreign support, they are more likely to accept higher prices than if the increase occurs in isolation. In 1991, the Hungarian government has kept a reserve of \$10 million for imports to dampen price fluctuations if necessary.

³ Unless stated otherwise, all dollar amounts are current U.S. dollars.

Table 11-3. Hungarian Agricultural Exports, Selected Years 1987-90
(billions of forints)

<i>Destination</i>	<i>1985</i>	<i>1987</i>	<i>1989</i>	<i>1990</i>
CMEA countries	45.8	41.5	38.6	37.2
Ruble denominated	27.0	29.1	28.4	25.6
Non-ruble	18.8	12.4	10.2	11.6
Developed countries	38.8	43.0	80.6	98.9
Developing countries	7.7	4.3	10.8	10.2
TOTAL	92.7	88.9	130.1	146.3

Note: Data may not add up due to rounding.

Source: Hungary 1991.

ECONOMIC ISSUES OF THE TRANSITION

The structure of ownership and management in Hungarian agriculture has undergone a series of fundamental changes in the past fifty years. In 1945 there was a general land reform that left virtually no trace of the large pre-war estates and that created a system of peasant small holdings. Between 1950 and 1960 there were three waves of collectivization. The first two waves, in 1950-53 and 1956, resulted in spectacular failure of agricultural production. Since 1960, units regarded by many observers as too large for efficient management have dominated the sector.

State farms occupy about 15 percent of arable land in 130 farms. Cooperatives manage 70 percent of the land in 1,320 farms. The remaining 15 percent of arable land is divided into 1.4 million small farms, either household plots of cooperative members or part-time farms of other households. The small farms specialize in livestock and horticulture, and are worked intensively.

In Hungary, as in other Central and Eastern European countries with collectivized agriculture, the private sector holds a small proportion of land, but produces a large share of gross output. With purchased feed and a concentration in high value crops, Hungary's private sector produces 36 percent of output, compared to the 49 percent from cooperatives and 15 percent from state farms. In recent years, the share of the private sector has grown at the expense of the cooperative sector, while the share of the state farms has remained constant.

As table 11-4 indicates, cooperatives formally own just over 60 percent of the land they use. The state owns about 4 percent of cooperative land, and members retain title to the remaining 35 percent. Cooperatives pay members a token rent (less than \$10 per hectare) for the use of privately owned land. Cooperatives assumed use of private land during collectivization, and gradually took title to the lands that they now own.

Legislation to clarify property rights in land has been under debate in parliament since early 1990. The intent of proposed legislation has been to recognize as valid the property claims of owners who held land after the 1945 land reform and gave it up during collectivization. Two issues have proved most difficult to resolve.

Table 11-4. Structure of Ownership of Land Used by Cooperatives, Selected Years 1968-89

Year	Total Land Used by Cooperatives (ha)	Percentage Owned by		
		State	Cooperative	Members
1968	5,481,475	27.75	.09	72.16
1975	5,604,871	4.42	44.66	50.92
1980	5,667,320	3.45	51.55	45.00
1985	5,693,728	3.98	56.68	39.34
1988	5,684,758	5.91	59.93	36.16
1989	5,679,191	3.81	61.12	35.07

Source: National Council of Cooperatives, Budapest.

An early piece of legislation would have settled the compensation of former landowners differently from the compensation of the owners of nonagricultural effects. The constitutional court noted that owners of agricultural land should not be treated as a special class. The treatment of all assets should be the same. During the lengthy debate on compensation, the original demand that actual land be returned to former owners or their heirs was modified.

Finally, the legal settlement for the land ownership issues was accepted by the Hungarian parliament at the end of April 1991 as a part of a national recompensation bill. According to the bill, the original owners of properties nationalized or collectivized after August 1949 (and their children) are eligible for compensation. The compensation is financial in the form of vouchers and can be used in the privatization of state properties. The amount of compensation is set on the basis of uniform rates on a regressive scale. The bill still provides some positive preference for former landowners. Land equivalent in quality and size to the lost property must be offered for sale by auction if they so request. However, the price of land will be set by concrete demand, and land is not guaranteed for every person who receives a voucher. In addition to the compensation bill, the parliament will regulate the land market and the transformation of cooperative farms.

Land is not the only important element in farm restructuring. Many Hungarian cooperative farms are diversified, and have substantial activity in addition to primary agricultural production. These other enterprises include food processing and light industry, and they employ many members. Cooperatives are the primary processors of animal feed and feed concentrates and wine, and careful treatment of these enterprises during the restructuring of farms is clearly important for the sector and the national economy. A separate law is being prepared to set rules for the restructuring of cooperatives. Most of these nonagricultural enterprises were built by the cooperatives. Because of the economic diversity of Hungarian cooperatives, many that are

not bankrupt will remain viable economic units even if much of their land is returned to private owners, but not farmed individually. These cooperatives may reduce their agricultural production, but remain in processing, light industry, marketing, and provision of services.

The future of state farms will be decided separately from cooperatives. Some state farms are located in areas where demand for land is low. Moreover, the economic arguments for retaining some of these farms as large units are greater than for the cooperative farms. State farms are classified in three categories: those that will remain public, those that can be fully or partially privatized, and those that must be dismantled.

The skills and experience of Hungary's agricultural managers in the cooperatives and state farms will be needed both during and after the restructuring. In contrast to more centralized agricultural systems, the relative independence of Hungarian farms created a large cadre of managers experienced in handling a wide range of decisions. These people will be needed in the private sector and the restructured larger farms regardless of the final organization of the firm. If they have access to appropriate additional training, Hungary should be well supplied with skilled agricultural managers.

CREATING A COMPETITIVE ENVIRONMENT

Farm restructuring and privatization throughout the economy will create the competitive environment in which markets can function. Privatization of food processing will be part of the general approach to industrial privatization. Of three general approaches to industrial privatization considered throughout Eastern and Central Europe, such as distribution of shares, vouchers, or case-by-case valuation and sale, Hungary has opted for the latter. Firms will be restructured and valued, and then offered for sale to the public. This "retail approach" offers some safeguards against corruption and spontaneous privatization, and secures revenues for the government. Moreover, it assures that the firm's purchasers have an interest in managing the company; an interim unit to provide corporate governance need not be created.

Small shops and enterprises can be sold quickly through "retail" privatization, but the restructuring and valuation of larger units takes time. A competitive environment created through "retail" privatization may emerge, therefore, with some delay. The physical configuration of the state food processing industry shows a fair potential for competition if the firms can be rapidly removed from the state umbrella through privatization or commercialization. In sugar processing, for example, eleven firms consisting of one plant each serve the country. If these firms competed, the Hungarian sugar industry would be less highly concentrated than in many larger countries. Twenty-seven state firms consisting of sixty-four plants provide meat processing, and the cooperative sector has significant activity in this area as well. The state bakery industry has 41 firms with 568 plants, but this is an industry in which entry of very small-scale enterprises should be expected even if existing state bakeries are privatized.

The timely release of existing processing capacity from the structures that have created monopolistic behavior can thus do much to create competition. Since Hungarian privatization may proceed slowly, exposure of food processors to actual or potential competition from foreign firms can increase competitive pressures even before restructuring creates domestic competition. This constructive role of foreign imports requires a liberal trading regime and a convertible

currency. The importance of agricultural inputs purchased for hard currency further argues for full convertibility of the forint. For example, about one-quarter of all tractors and over half of livestock equipment is imported from the European Community.

The East German experience suggests caution, however, in the use of food imports to stimulate competitive behavior. The threat of competition from imports must be credible enough to affect processors' behavior, but actual flows should not overwhelm the domestic industry unless the country has no longer-run comparative advantage in the product. The exchange rate is critical here. If the currency is convertible, failure to effect timely devaluations can quickly deplete foreign currency reserves and fatally shock processors attempting to adjust. Processors can be made to act competitively if the industry is restructured through privatization and if foreign firms are allowed entry. They will actually be competitive; they will survive to serve domestic and foreign markets, only if new investment can be attracted to modernize the physical plant.

The role of the public sector in promoting a competitive environment extends beyond the task of relinquishing activities better conducted by the private sector. The physical infrastructure necessary for a market economy is poorly developed, and the public and private sectors can both contribute to its growth. The public sector can collect and distribute market information, and regulate new marketing institutions, such as commodity exchanges. The public sector must maintain agricultural education and research to promote the modernization of Hungarian agriculture. Moreover, in the far from competitive conditions in world markets, the government must provide leadership for economic diplomacy to secure market access.

PRICE LIBERALIZATION

Measurements of Hungarian price subsidies have been attempted since the early 1980s (Varga 1989; Borszéli, Mészáros, and Varga 1986). Although uncertainty about the appropriate exchange rate and comparative prices complicates analysis, the overall level of producer support prior to the transition appears to have been less than in North America and the European Community, and approximately the same as Australia. This overall moderate level of protection was achieved by averaging low support for grains and early vegetables with high protection of livestock products and more highly processed foods.

The official price system was the instrument for delivering support. Many producer and consumer prices were fixed. Producer prices were based on costs of production on large state farms, and bore no clear relation to world trading prices. Consumer prices were in many cases inadequate to cover costs of delivery, and the state budget paid the difference. Price controls did not cover seasonal goods, and most vegetables, fruits, eggs, and specialty products were free of controls. The restricted coverage of price controls and the absence of quantity controls distinguish the Hungarian system of price regulation from that of other Central and Eastern European countries in the past. In addition, Hungarian consumer prices were adjusted with enough regularity that the concept of price movements was more generally accepted than in other countries of the region.

In 1990 prices were liberalized. Some price controls were retained for bread, wheat, and milk. Consumer prices remain fixed for only one category of bread, and for lowfat (2.8 percent) milk. Producer and consumer prices of other products are not fixed.

Price liberalization is an integral part of the creation of an environment in which markets can function. Liberalization prior to the creation of genuine competition carries the risk of sanctioning monopolistic behavior. The risk is greater as long as the forint is not completely convertible and imports are restricted, but it is an unavoidable risk. An additional objective of price liberalization is to promote macroeconomic stabilization by reducing the burden of subsidies on the budget (see table 11-5 regarding subsidies to food production). In 1988, budget subsidies of all kinds comprised 12 percent of Hungarian GDP. Unlike other countries of the region, explicit food subsidies were a rather small part of this total subsidy bill, and constituted less than half of one percent of GDP. Tax receipts from sales of alcohol and tobacco consistently exceeded direct consumer subsidies for food. This is in contrast to, for example, the USSR, where in 1990 the direct food subsidy alone was approximately 11 percent of GDP.

The rather small burden of Hungarian food subsidies can be explained in several ways. The subsidy was more than halved between 1986 and 1989 by price increases on controlled items. The commodity coverage was restricted, since many seasonal items were already not controlled. Most subsidization of Hungarian food took place several steps away from the final consumer. This policy had the very important advantage of accustoming consumers to prices that change.

Substantial subsidies for processing, inputs, and exports remained, and these combined with direct consumer subsidies to total approximately 4 percent of GDP in 1988 (Borszeki, Meszaros, and Spitalszky 1989). Removal of these rather than of direct consumer subsidies, has had the greatest impact throughout the agricultural economy.

In addition to the few remaining consumer subsidies, several types of producer subsidies have been retained (although the amounts were reduced in 1990). Milk and beef production are still subsidized. Fertilizer and protein feed are also still subsidized, although the amount was reduced in 1990. Farms operating in unfavorable climatic conditions currently receive subsidies. Export subsidies have been reduced, but not eliminated. Hungary's ambitious program of subsidy reduction (to 5 percent of GDP by 1992, and to 4 percent by 1993) will subject these agricultural subsidies to continued scrutiny, but the larger targets for reduction now lie outside agriculture, in housing, energy, and transportation.

Tax reform is a corollary of price liberalization and reduction of subsidies. The old system of high subsidies paradoxically also subjected many farms to high taxes, and because of budget pressure tax rates increased in recent years. Tax reform will affect agriculture in important ways, through changes in both incidence and rates. At present, private agriculture is virtually tax exempt. It may be appropriate to exempt food from value-added taxes during the transition, given the importance of private agriculture in absorbing redundant labor and muting the impact of price liberalization. In the longer run, however, tax reform will have to encompass commercial private agriculture.

AGRICULTURAL CREDIT

Disruption in the traditional channels of agricultural credit contributes to the uncertainty that now permeates the agricultural sector. Purchases of current inputs, such as fertilizer and

Table 11-5. Budget Contribution of Food Production in Hungary, 1980-90
(billions of forints)

Year	Agriculture			Food Industry			All Food Production		
	Tax Income	Subsidy	Balance ^a	Tax Income	Subsidy	Balance ^a	Tax Income	Subsidy	Balance ^a
1980	19.4	27.6	-8.2	29.1	27.1	2.0	48.5	54.7	-6.2
1981	23.3	29.0	-5.7	28.2	28.3	-0.1	51.5	57.3	-5.8
1982	28.5	28.6	-0.1	29.8	27.5	2.3	58.3	56.1	2.2
1983	30.9	29.8	1.1	32.5	35.0	-2.5	63.4	64.8	-1.4
1984	36.5	27.7	8.8	35.3	40.8	-5.5	71.8	68.5	3.3
1985	40.8	24.7	16.4	37.3	41.4	-4.1	78.1	65.8	12.3
1986	39.4	29.5	9.9	38.2	51.7	-13.5	77.6	81.2	-3.6
1987	44.0	34.9	9.1	43.1	56.3	-13.2	87.1	91.2	-4.1
1988	39.3	34.9	4.4	61.4	49.7	11.7	100.7	84.6	16.1
1989	46.0	32.4	13.6	68.6	53.2	15.4	114.6	85.6	29.0
1990									
Planned									
1991	45.8	21.6	24.2	66.8	47.6	19.2	118.6	69.2	43.4

a. The balance is marked negative (-) if the amount of subsidy is higher than the tax income.

Source: Ministry of Finance.

fuel, are down, as are longer-term investments. Much of the reduction can be attributed to general uncertainty and depressed prices, but interruption of traditional credit relations has played a role. Large farms have traditionally advanced feed, seed, and services to the mini-farmers affiliated with them, and taken repayment after sale. With the tighter monetary policy of the stabilization program, however, many larger farms are short of liquidity. Even if they are not themselves short of funds, they are less willing than in the old days to pass on subsidized credit when their access to subsidized credit is diminished.

Private farmers no longer offered advances from cooperatives can turn to formal credit markets, where interest rates are between 20 and 25 percent. The government offers food producers a 3 percent subsidy for short-term credit. The subsidized nominal rate is substantially below the projected rate of inflation for 1991 (about 38 percent), but producers are nonetheless reluctant to take on debt at that rate. Producers with limited experience of high nominal rates and a poor understanding of the likely course of inflation probably do not perceive the negative real rate of interest. Even if they see it, they cannot turn it to financial gain on the poorly developed domestic capital market. Moreover, few expect producer prices to increase as fast as the general price level. Under these circumstances, credit, even at a negative real rate, is unattractive. Large farms in a liquidity crisis must borrow at high nominal rates or face bankruptcy. The increased debt will reappear in the sorting of assets and liabilities as farms are restructured.

FOREIGN TRADE

Hungary can ill afford continued subsidies for uncompetitive agricultural exports. A precipitous drop in exports, however, would further strain the trade balance, and increase the

shock to domestic producers, since approximately one-third of output is exported. The program of subsidy reduction has been drafted with a continuation of agricultural export subsidies at a reduced level. The longer-term prospect for Hungarian agricultural exports depends on improved competitiveness and greater market access.

Restructuring at the farm level can contribute to improved management and incentives. Restructuring is necessary for improved competitiveness, but it will not be sufficient unless the processing industry is fundamentally reorganized and reequipped. Joint ventures with foreign food processing firms can make a crucial difference in the speed and quality of reinvestment in Hungarian food processing.

The attractiveness of Hungarian processing plants as joint ventures depends, in turn, on market access. Hungary's food has traditionally served four foreign markets: Western Europe, Central and Eastern Europe and the USSR, other developed market economies, and developing market economies. The Soviet Union has been Hungary's largest agricultural trading partner, and the potential for Soviet trade in the future remains great. During the present Soviet economic crisis, however, commercial trade has collapsed. Hungary cannot offer the concessional prices and credit of major food donors. With the exception of food and energy, barter trade has little appeal, and Soviet ability to deliver fuels and energy is falling. The disarray in Hungary's former CMEA trading partners increases the external shock of the transition.

Hungary is moderately well placed geographically to export to the Middle East, and Middle Eastern countries were traditionally important among Hungary's partners in developing market economies. Recovery in this market will also take time, although exports to Iran have increased in recent months.

Access to markets in Western Europe and North America depends on whether or not the GATT succeeds in reducing policy-induced excess supply in these regions. Hungary has negotiated special access to the European Community for important agricultural products; in 1990 and further in 1991 this helped very much to mitigate the impact of the collapse of the Soviet market. As excess supply becomes a regional issue throughout Eastern Europe, however, and the special political contribution of Hungary in 1989 recedes in time, special relationships are unlikely to provide secure access. Massive redirection of exports from traditional markets to new partners would tax even a wealthy market economy with highly developed marketing skills. It is all the more challenging for Hungary, for which marketing is the least-developed legacy of the pre-transition economy.

AGRICULTURE AND THE ENVIRONMENTAL LEGACY

Experts and the general public have only recently expressed active concern about the condition of agriculture's natural resource base. Lack of attention can be ascribed to a poor understanding of the nature of the problem, and the perceived urgency of economic ills. Two issues currently dominate the newly active environmental awareness: urban pollution and groundwater contamination by nitrates. Poor management of fertilizer and pesticides contributes to groundwater problems, and also compromises the quality of soil.

Hungarian agricultural success is linked to the richness of the soil. Soil acidification is in part due to inherent soil composition, and subsidized programs of soil improvement, primarily liming, have been in place only since the 1980s. These programs yield a good return where soil

quality is better than average, and without state subsidy the investment probably would not have been made. The returns on land of lower quality in marginal areas are not high.

Fertilizer use has fallen throughout most of the 1980s, and the decreases in 1989 and in 1990 were very large. Use of pesticides similarly declined from a peak in 1982 and 1983. The drop was in response to higher prices and lower expected returns to input use. Current low use reduces the urgency of policies to promote environmentally responsible use of agricultural chemicals, but such policies will be needed in the longer run.

Hungary's animal husbandry is less intensive than Western Europe's, but manure handling techniques are neither adequate nor environmentally safe. The problem is greater in small-scale animal husbandry, and is compounded by the addition of household waste and sewage. Small-scale producers are also a source of pesticide contamination, either through inappropriate choice of chemical or poor application. Environmental problems currently evident in private small-scale agriculture highlight the need for consideration of environmental issues as farmland moves back into private ownership and smaller-scale production units proliferate.

PROSPECTS AND CONCLUSIONS

As the transition creates conditions for a stronger economy and underdeveloped sectors expand, the relative importance of Hungary's agriculture will decline. During the transition, however, agriculture remains important through its impact on the trade balance, domestic price level, and employment. The timing and success of Hungary's agricultural transition will depend on many factors. Important among them are: the ease with which land legislation is implemented and farm restructuring proceeds; the speed with which the agricultural processing industry is restructured and reequipped; and the recovery of Hungary's traditional export markets in Eastern Europe, the USSR, and the Middle East, as well as improved access to new markets.

Technical and financial assistance and cooperation from the international community is vital for the specific sectoral agenda of the agricultural transition. More importantly, strong ties with and support from the international community can reinforce public commitment to the transition at a time when deepening economic crisis, increased political division, and sharpening social distress try public confidence. Even as the costs of the transition become increasingly clear, little nostalgia for the old system is evident. Instead Hungarians show increasing respect for the complexity of the tasks ahead, an increasing effort to reach the consensus necessary to proceed.

REFERENCES

A mezőgazdasági vállalatok gazdálkodása 1987. 1988. Budapest.

Borszéki, E., S. Mészáros, G. Varga. 1986. *Competitiveness of our Food Economy* (in Hungarian). Budapest: Kozgazdasagi es Jogi Konyvkiado.

Borszéki, E., S. Mészáros, M. and M. Spitalszky. 1990. *The International and Domestic Position of the Relations Between Agricultural Prices and Subsidies* (in Hungarian). Budapest: Research Institute for Agricultural Economics.

Borszéki, E., S. Mészáros, and M. Spitalszky. 1989. "Price Support in the World and in Hungary" (in Hungarian). Manuscript. Research Institute for Agricultural Economics, Budapest.

Csendes, B. 1989. *New Agricultural Policy* (in Hungarian). Budapest: Mezogazdasagi Kiado.

Hungary. Central Statistical Office (CSO). 1991. *Agricultural Data 1990* (in Hungarian).

Szelenyi, Ivan. 1988. *Socialist Entrepreneurs: Embourgeoisement in Rural Hungary*. Madison, Wisc.: University of Wisconsin Press.

Varga, G. 1988. "Prices, Taxes and Subsidies in the Food Producing Sector." Manuscript. Research Institute for Agricultural Economics, Budapest.

Varga, G. 1989. "Export-Oriented Development of Major Integrated Production Sectors." Manuscript. Research Institute for Agricultural Economics, Budapest.

THE SOCIAL EFFECTS OF AGRARIAN REFORM

*Balazs Szelenyi and Ivan Szelenyi**

Despite the dramatic political changes in Eastern Europe, little reorganization of agricultural production has occurred to date. In mid-1991, the cooperatives (*latifundia*) are still in place. In many places they are run by the same people as before in much the same manner. This is understandable since agricultural reorganization will inevitably be the subject of intense social struggles. Former owners of collectivized land, current owners, active and retired cooperative members, agricultural professionals who managed cooperatives, and the emergent new family farmers have diverse and often conflicting interests. This paper examines the impact of the capitalist transformation on the socio-economic structure in the Hungarian countryside.

THE INHERITED AGRARIAN SOCIAL AND ECONOMIC SYSTEM

The Hungarian agricultural "miracle" was achieved by an innovative mixture of collective, individual, and private forms of production. Approximately 90 percent of the arable land⁴ was cultivated in "collective forms."⁵ On the remaining 10 percent, 60 percent of all Hungarian families (including the urban families) produced food partially for their own consumption, and partially for the market.⁶ On this 10 percent of the land, about 30 percent of the total value of all agricultural production was produced (Hungary 1982), and more than 20 percent of all marketed agricultural products came from these family mini-farms (Szelenyi 1988). By 1982, between 5 and 15 percent of the rural population began to produce mainly for markets rather than for subsistence, and their incomes from family farming equalled or exceeded the income of an average industrial worker. Thus, by 1982 in Hungary (a country with somewhat more than 8.2 million hectares of arable land), there were about 1.5 million families that were "agricultural entrepreneurs," mini-farmers rather than peasants, post-peasants, or peasant-workers (Szelenyi 1988, p. 32). Although they cultivated only one or two acres of land per family and had one or more industrial or agricultural full-time wage earners in each family,

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⁴ These figures reflect the realities of the early-mid 1980s. Most of the data come from a national income survey conducted by the Hungarian Central Statistical Office (CSO) in 1982. The results are in Szelenyi 1988.

⁵ The average collective farm held about 2,500 hectares, and the average state farm was about 6,600 hectares (Donath 1977).

⁶ Almost all of the family producers produced part-time. Some of them were members of agricultural cooperatives, though over time, the number and proportion of non-crop families increased. The number of full-time family farmers and the amount of land under their cultivation was negligible, and the authors have no data about any major change in this respect so far.

they ran highly specialized commercial farms, rather than the traditional, less sophisticated subsistence operations.

These mini-enterprises existed in a symbiotic relationship with the *latifundia*; their success and chance of survival in part depended on the collective sector. Half of these entrepreneurs worked for agricultural cooperatives, and the other half were industrial workers, who typically commuted to urban work-places and ran their family business part time. About 40 percent of all families live in rural communities. Many Hungarians have thus survived by supplementing low wages and salaries with revenues from part-time family farming.

Hungarian agricultural policy was flexible not only towards family production on individual plots; in the collective sector, a variety of forms of "family incentives" were used, such as sharecropping or "putting-out" of livestock. Thus, the actual "private sector" was even larger than indicated above. By the mid-1980s, approximately half of the value of agricultural production may have been produced in family work organizations, although in a symbiotic relationship with collectives.

Hungarian agriculture was unique in the extent to which family production was tolerated and encouraged within the framework of a collectivized system. In other socialist countries, family production suffered more. Paradoxically, this was the case even in Poland and Yugoslavia, where agriculture was not collectivized. In these countries, family farms were over-regulated and excessively taxed.

Hungary, however, shared some common features with all socialist countries. All socialist countries had a distorted, suboptimal distribution of farm sizes. In particular, medium-sized farms (between 50 and 500 hectares) were absent. The countries that did not collectivize froze in a nineteenth century peasant landholding system. The countries that collectivized created huge, relatively inefficient collective farms, which were dependent on mini-farms. Such an organization of agriculture kept an unusually high proportion of the population on the land and in rural villages.

In light of these peculiarities, it would not be surprising if during the next decade the former socialist countries face major shifts in demographic distribution between the urban and rural, agricultural and nonagricultural population and a reorganization of firm sizes in favor of middle-sized farms.

By the mid-1980s, the opportunities of the traditional symbiosis of collective and private farming were exhausted. As in other spheres of the economy and social life, state socialism was sinking into an ever-deepening crisis. Most importantly, the capital and environmental costs of production of the *latifundia* became prohibitive. The cooperatives tried to adjust to shrinking business opportunities in agricultural production proper (and the overemployment resulting from continued advances in mechanization) by engaging in industrial production, construction, restaurants, and service industries (Kornai 1980).⁷ In time, these industrial sidelines became a major source of revenue and employment.

Family entrepreneurship lost its earlier dynamism, because of prohibition on the purchase or even lease of land as well as to credit constraints and low general business confidence. On

⁷ According to Kornai (1980) "The cooperatives have engaged in the production of parts for the state-owned industries, in light industry in construction, in trade and in the restaurant business."

the eve of the transition the scope for social and economic innovation within the old system was exhausted.

SOCIAL IMPLICATIONS OF CHANGES IN LAND OWNERSHIP

Social and political struggle over access to land is part of the Central and Eastern European heritage from the nineteenth century. Kautsky (1899) identified the "Agrarfrage," or struggle for land, as the distinguishing feature of East European agrarian conflict. In North America and Western Europe, the land issue has been replaced by the problem of controlling overproduction. In Hungary during the transition both the struggle for land and the problem of overproduction are present.

The struggle for land is evident in the debate on "privatization" vs. "reprivatization". The return of land to original owners is referred to as *reprivatization*. Other ways of finding identifiable owners is called *privatization*. Advocates of land privatization hold that land should become the individual property of members of cooperatives. Power would then be entrusted to members and they would decide amongst themselves the intricacies of allocation. Under privatization, it is likely that managers and specialists on current collective farms would emerge as owners of relatively large private farms.

Alternative ways of transferring land rights to private agents will have implications for farm sizes. In countries where agriculture was collectivized, the current over-dominance of very large farms will inevitably decline. Where small peasants farms were preserved (Poland and Yugoslavia), a concentration of land will inevitably take place. Depending on whether Hungary chooses privatization or reprivatization, the mix of farm sizes and the pace of change will be very different. Reprivatization is likely to create many small family farms, and it may take some time before market competition begins to force concentration and produce an agrarian system similar to the one we know from Western Europe. Privatization is likely to preserve larger farms, though very large cooperatives may be broken down into smaller "real cooperatives."

The transfer of land rights has implications for the distribution of wealth as well as for farm structure. In Hungary, industrial productive capital is estimated to be worth \$20 billion, while the 8 million hectares of agricultural land with infrastructure are worth around \$10 billion. Determination of the ownership of these assets has clear social consequences for the agricultural population. Major actors in this context are former owners, current or retired members of cooperatives, the agrarian technocracy, and the rural population at large.

Despite passage of two land laws (the latest in April 1991), land ownership is not yet resolved, and farm structure is little changed. As Hungary has opened up to market forces, as prices have been deregulated, as subsidies of fuel and fertilizers have been slowly eliminated, the signs of overproduction have been observable. One of the first consequences of the early capitalist transformation is the exit of many small entrepreneurs. The former agricultural second economy has been hit hard. The cooperatives that have already changed are better able to survive the difficulties of the early transition.

PRIVATIZATION AND REPRIVATIZATION: THE DEBATE

Reprivatization in the East European discourse today refers to the process by which the original owners of property regain their former assets. Privatization is an alternative to reprivatization, and is the process by which public or cooperative property is passed to new private owners. A third concept, compensation, has also entered into the vocabulary of transition. Compensation refers to a mechanism by which former owners can be compensated in some other form besides restoration of the property. In most cases, those who oppose reprivatization recommend a partial or even a symbolic compensation for the losses caused by socialism and frequently such proposed measures are linked to compensation for other losses or injustices (for instance, imprisonment, loss of job or income).

There are important differences in emphasis on reprivatization and privatization by country. Germany and Czechoslovakia, for instance, opted for a far-reaching and swift reprivatization before privatization. Poland and Hungary have tried to avoid reprivatization (and go directly to privatization) by creating legislation of partial (in the case of Hungary) or full (probably in the case of Poland) compensation for property loss (Brooks, this volume).⁸

In Hungary, the question of reprivatization was put on the agenda by the Smallholders Party during the fall of 1989 and winter of 1990 in connection with land, but soon it became obvious that, for reasons of both social justice and constitutional law, restoration of land ownership could not be isolated from restoration of other property rights. Former owners of small and large businesses (in Hungary pharmacists were, for some reason, among the first to claim their nationalized shops back), and owners of apartment houses have also been active in defending claims.

The issue was of major importance during the first year of parliamentary democracy and it is still far from resolved. The governing coalition was deeply divided on this issue. With the Democratic Forum strongly opposed to reprivatization and the Smallholders strongly in favor of it (but only really concerning land rights), the compromise of partial reprivatization for land to those who would pledge to cultivate it was sought. The law drafted in this spirit was found unconstitutional by the Supreme Court and sent back to the legislature for redrafting (law and ruling in *Magyar Hirlap*, May 3, 1991, pp. 8–9 and May 30, 1991, pp. 4–5). In Hungary, therefore, property rights in land cannot be considered separate from ownership of assets more generally.

Compensation raises additional issues. Since government budgets are under strict financial constraints, no East European country is capable of paying compensation "in cash." In Czechoslovakia, Poland, and Hungary, compensation will be in the form of "vouchers." These "vouchers" cannot be "cashed in" but can be used to purchase real property, primarily stocks and bonds.

The advocates of reprivatization argue their case on the grounds of historical justice and constitutional legality. Opponents of reprivatization fear that recognition of former property rights will open prospects of never-ending law suits and unsettled property rights for years to come. This will scare away foreign capital necessary for the transition and restrict domestic investment.

Critics of reprivatization express concern that the restoration of precommunist landholding would create many small holdings of insufficient size, not unlike those currently in

⁸ For further discussion of reprivatization of land, see Brooks, this volume.

existence in Poland. According to the 1983 Social Mobility Study, even if one limited reprivatization to those who reside currently in the countryside, half of the farms would be under three hectares.

This information is not consistent with data on distribution of farms before communism. In 1949, from 1.1 million agricultural enterprises, 527,000 firms operated on 5 cadastral yokes (a cadastral yoke is 1.422 acres), which seems to be the minimal size on which a family can survive even under relatively intensive cultivation (Donath 1977). Furthermore, opponents of reprivatization argue that former owners have little desire to claim their land and there is little support in public opinion for such a policy. According to a public opinion poll conducted by TARKI (the Hungarian Social Science Information Center) in May 1990, 24 percent of the respondents believed that land should be returned to original owners. Most people wanted either the cooperative members to decide the future of the land or they wanted the land to stay under cooperative cultivation. The question, "What is in your view the right solution to the land rights issue?" brought the following responses:

Response	Percentage of all those polled giving that response ⁹
The land should be given back to the 1947 owners	23.5
The members of cooperatives should decide what to do	40.9
Those who can pay the most for it should get the land	4.9
Cooperatives should stay as they are	22.7
Some other solution	8.1

According to those who want privatization, reprivatization in agriculture is not realistic politically, legally, or economically; absentee ownership would be widespread and have destabilizing effects; this would result in holdings that were too small. Furthermore, only 25 percent of the electorate supports the idea, and the majority is opposed. Those who favor privatization over reprivatization also point to the difficulty of identifying the former property. Property that was nationalized years or decades ago may have disappeared or changed its form or value radically.

⁹ Numbers total 100.1 percent due to rounding.

One way to reconcile diverging views is to give compensation in lieu of actual property. Some would prefer a partial compensation in order to reduce possible inflationary pressures and a major increase in social inequality resulting from full compensation. Others support full compensation arguing that the "voucher" system—if properly implemented—is a guarantee against inflation and will swiftly create the lively capital market badly needed in post-communist economies. The social implications of redistribution of property rights can be examined by viewing the impact on major social groups: former owners, members of cooperatives, rural residents, and agricultural specialists. These groups are, of course, not mutually exclusive.

FORMER OWNERS

According to the 1983 Social Mobility and Life History survey, almost 40 percent of the total Hungarian heads of households come from families that owned land in 1948. Slightly more than half of these landholdings were smaller than 3 hectares in size. Around 18 percent of the respondents come from families who owned at least 2.86 hectares, and 6 percent owned more than 5.71 hectares. Table 11-6 illustrates the 1948 distribution.

Table 11-6. Distribution of Landholding in 1948 in Hungary by 1983 Heads of Household

<i>Size of Landholding in 1948 (hectares)</i>	<i>Household Head (percent)</i>
0	61.7
0 - 2.85	19.8
2.86 - 5.7	12.3
Over 5.7	6.1

Source: Hungary 1983, authors' calculations.

Thus about 2 million people (or one-fifth of Hungary's 10 million people) would benefit quite significantly from a restoration of precommunist land rights. Since 1 hectare of agricultural land is valued between \$1,000 and \$2,000¹⁰ (*Magyar Hirlap*, May 31, 1991) each family could gain between \$3,000 and \$10,000, which is not a negligible sum in a country where average annual income is around \$3,000 before tax.¹¹ The total value of land that 18 percent of Hungarian families could claim is around \$3-4 billion.

Data from 1983 also suggest how reprivatization would distribute landownership among urban and rural families, as shown in table 11-7. For example, almost half of all rural households have no claim to land under reprivatization. As a result of rural-urban migration, a considerable number of descendants of former owners of land no longer live in rural

¹⁰ According to a report by *Magyar Hirlap*, one hectare of arable land sells in some parts of the country for Ft 50,000-100,000 (US\$1 = Ft 70) while one hectare of vineyard may be worth as much as Ft 1,000,000.

¹¹ These figures may be exaggerated. The authors analyzed questions asked in the survey about ownership of land by the respondents or their parents in 1948. Some double-counting may have taken place, since respondents may have been siblings who may have to share their inheritance (if they ever do receive it).

communities. In Hungary, for instance, about 15 percent of (or almost 300,000) urban households come from families that owned at least 3 hectares of land in 1948. In rural communities, the proportion of such families is larger, but only marginally so, around 25 percent.

Table 11-7. Distribution of Land Ownership in Hungary in 1948 by 1983 Residence of Household Head

Size of Landholding in 1948, hectares	1983 Residence of Household Head	
	Urban (percent)	Rural (percent)
0	66.1	48.5
0-2.85	17.6	25.9
2.86-5.7	10.9	16.9
Over 5.7	5.4	8.8

Source: Hungary 1983, authors' calculations.

Many of the former owners, or their heirs, may not wish to take their family land back. Many live in cities and may have little interest in land except as a financial asset. Rural people who have left agriculture may also have reservations about claiming land, particularly if ownership entails responsibilities or tax liabilities. Some indirect evidence, however, suggests that former owners realize the potential financial gains they could reap from reprivatization. They may therefore want title to their family land even if they do not intend to cultivate it. The proportion of the population that supports reprivatization (one-fifth) is the same as the proportion of the population that would gain from the policy.

MEMBERS OF COOPERATIVES

About 500,000 people are currently employed on the socialist *latifundia*, in both primary agricultural production and industrial activity. The majority of members of cooperatives would not receive land through reprivatization. According to the previously cited 1983 Social Mobility and Life History Survey, about 40 percent of cooperative members are from families that owned no land in 1948, and another 27 percent come from families who owned 2.85 hectares or less. At present, the cooperatives work with excess labor. If cooperatives were to be transformed to profit-oriented business organizations, the number of their employees would be reduced.

The elderly face the most serious danger. Retired cooperative members currently receive pensions from the cooperatives. If the kolkhozes become real cooperatives, or if they become capitalist agribusinesses, there will be a pressure on them to shift responsibility for pensions to the state.

The majority of cooperative members and those on pensions have incentives to keep the current agricultural system. Neither reprivatization nor capitalist reorganization of farms would benefit these people. They might, furthermore, lose access to their household plots, a significant source of income to many families. The income from these small plots would fall in competition

with a more efficient commercial agriculture. Members of cooperatives would therefore be likely to prefer the status quo or privatization over reprivatization.

RURAL RESIDENTS

As a result of the socialist organization of agriculture and socialist policies of urban development, an exceptionally high proportion of the population remained rural. The term "under-urbanization" describes this unique socialist pattern of urban growth (Konrad and Szelenyi 1977). The concept of under-urbanization describes a strategy of urban growth and industrialization in which the number of urban industrial jobs grows faster than the urban population. This has been a characteristic feature of extensive socialist industrialization; investment in urban industry is not matched by investment in urban infrastructure. As a result, industrial jobs are created without urban housing for the new industrial working class. This first-generation new working class retains its rural residence, and commutes to urban workplaces. These first-generation urban industrial workers retained their rural residence not by choice, but because of the shortage of urban housing. The necessity of living in the countryside allowed them to retain household plots. Men commuted while wives became members of a cooperative to qualify for a household plot. Other households owned or rented agricultural land for intensive cultivation.

A previous study on the reemergence of family farming in Hungary during the late 1970s and early 1980s (Szelenyi 1988) noted that among the most successful, most dynamic rural entrepreneurs, industrial workers were as well-represented as members of the cooperatives. In the mid-1980s, approximately 200,000 mini-farmers had the potential to become real entrepreneurs, with agricultural and business skills to run full-time family farms. Only half of these were cooperative members, and the other half were industrial workers.

An important fraction of the rural population has quite different interests from the members of the cooperatives. Less than half of rural residents are members of cooperatives, and transfer of ownership to cooperative members would leave out many rural residents currently engaged in agricultural production outside the cooperatives. Typically, the rural working class is less skilled than its urban equivalent, and rural workers will be made redundant before urban workers. Unemployment in Hungary in the next few years is expected (at least by the authors) to reach between 10 and 20 percent. It will be unequally distributed between rural and urban areas, but it will hit villages much harder than cities. The mini-farms are important income supplements for families of rural industrial employees, and these households now face more insecurity in their employment and downward pressure on their second (agriculture) incomes. Small agricultural business is already suffering from the reduction of price supports for fuel and fertilizers and the reduction of export subsidies for food products. The symbiosis between the mini-farms and the cooperatives, nurtured traditionally by soft budgets is now changing to a more competitive relationship. It is not surprising therefore that such a high proportion of respondents in public opinion polls—about 60 percent—would like to keep the cooperative system as it is or to leave it to the members of cooperatives to decide what should happen with land ownership.

The strongest support for reprivatization may come from rural industrial workers who developed labor-intensive, market-oriented mini-farms during the last two decades. These people

represent between 5 and 10 percent of the rural population, and many are descendants of middle peasant families. These mini-farms were most constrained by restrictions on purchase or lease of agricultural land. Their proprietors are also the most likely to be from families that lost title to their land in 1948. If they lose their urban industrial jobs, they may be keen to get land back and to start a family business again. If these people cannot remain in agricultural production, it would be a loss to Hungarian development, for they have shown great tenacity, a capacity for hard work, and wealth of innovation. It would be ironic if they become "proletarianized" after the fall of state socialism.

AGRICULTURAL TECHNOCRACY

The final group of agents whose interests are considered are the professionals who have run Hungarian agriculture since approximately 1972. They are presidents of cooperatives, chief accountants, agro-technicians, veterinarians and others. This group, though 40,000 or less in number, is politically strong.

As Pal Juhasz (1983) points out in his important research on agricultural professionals and the cooperative leadership, a genuine change in personnel took place in Hungarian agriculture in the late 1960s. During the collectivization drive of 1960, former middle class peasants took leading positions of the newly formed cooperatives. This was the consequence of a relatively pragmatic collectivization policy adopted by the Hungarian government. In other countries, and in Hungary during earlier drives of collectivization, the middle class peasants were discriminated against, and were not regarded as sufficiently reliable ideologically. As a result, the cooperative leadership was dominated by poor peasants with little managerial experience. The Hungarian regime learned from this lesson, and in 1960 it offered privileged positions to middle class peasants.

By the late 1960s, the situation began to change. After collectivization, agricultural colleges increased enrollment and began to turn out highly qualified agrarian technocrats. In the late 1960s, and early 1970s, there was intense conflict between the old middle class peasant cadres and the young new agricultural technocracy. The old guard emphasized that the technocrats lacked practical experience. The young technocrats accused the old guard of not being innovative and of not accepting new technology.

The regime supported the younger technocrats, and in the ensuing years these younger people implemented reforms that reorganized the agricultural cooperatives. One of these important reforms was the so-called "amalgamation" of the agricultural farms. During collectivization, there were usually several cooperatives in each village and cooperatives smaller than 1,000 hectares were common. With amalgamation, these smaller cooperatives virtually disappeared and were replaced by mega-cooperatives. The resulting farms frequently cultivated several thousand acres. The old middle class peasant cadres were able to run a cooperative of a few hundred hectares, but on the newly created mega-cooperatives, they lost self-confidence and gradually gave their positions to the new technocrats. The government also channeled major capital investment into agriculture for new technology unfamiliar to the poorly trained older peasants. By the 1980s, therefore, Hungarian agriculture was under the control of highly trained professionals.

Similar changes took place in political and industrial management. Erzsebet Szalai has pointed out that in the early 1980s, a "new elite" had emerged in Hungary (Szalai 1990 and Hankiss 1989). The new technocratic elite was more open to Western ideas and did not have the ideological reservations of the old guard against markets or even private property or capitalism. There was an increasingly intense conflict between the old cadre nomenklatura and the new elite. By the late 1980s, the new elite was emerging victoriously from the struggle. As Elemer Hankiss and Jadwiga Staniszkis point out, the new elite tried to use the opportunity of the breakdown of the socialist system to transform itself into a propertied bourgeoisie (Hankiss 1989, Staniszkis 1991). Jadwiga Staniszkis calls this process "political capitalism," meaning the use of managerial position to accumulate private wealth.

The agricultural technocracy is part of this general trend. They formed their own political organization in Hungary,¹² and stood firmly against reprivatization. They argued the need for economies of scale (large farms), and expressed doubt about the viability of family farms. The agricultural technocracy has an interest in transforming the cooperatives into joint stock holding companies in which they will hold a dominant share. They also support foreign investment to promote a technologically more sophisticated agricultural sector and close links with foreign firms. The technocratic intelligentsia is very actively building bridges towards Western business and is fighting vehemently what they see as the parochialism of populists concerned about the degree of foreign involvement in the domestic economy.

The interests of different social groups in the important issue of redistribution of rights to land are the subject of intense debates and social struggles. Different social strata have widely divergent interests, and resolution of this issue has implications for trajectories of development of East European agriculture in the future.

REFERENCES

- Brooks, Karen M. This volume. "Property Rights in Land."
- Donath, Ferenc. 1977. *Reform es forradalom*. Budapest: Akademiai Kiado.
- Hankiss, Elemer. 1989. *Kelet-europai alternativak*. Budapest: Kozgazdasagi es Jogi Kiado.
- Hungary, CSO (Central Statistical Office). 1982. *Family Agricultural Production* (in Hungarian). Budapest: CSO.
- Hungary, CSO (Central Statistical Office). 1983. *Results of Social Mobility and Life History Survey* (in Hungarian). Budapest: CSO.
- Juhász, Pál. 1983. "Az agrárértelmiség szerepe és a mezőgazdasági szövetkezetek." *Medvetànc*, no. 1, pp. 191–213.

¹² This was called the Agrarian Association, which campaigned as a party during the 1990 parliamentary election. They did not win the 4 percent vote necessary to be represented as a party in parliament, but they have member of parliament who was elected as an independent.

- Konrad, Geroge and Ivan Szelenyi. 1977. "Social Conflicts of Under-Urbanization." In Michael Harloe, ed., *The Captive City*. New York: John Wiley and Sons.
- Kornai, Janos. 1980. "The Dilemmas of a Socialist Economy—The Hungarian Experience." *Cambridge Journal of Economics* 4(1), pp. 147–157.
- Kautsky, Karl. 1899. "Die Agrarfrage." Stuttgart: Dietz. Selections reprinted in English in *Economy and Society* 5(1) (1976), pp. 2–49.
- Staniszkis, Jadwiga. 1991. "The Dynamics of Breakthrough in Eastern Europe." Berkeley, Calif.: University of California Press.
- Szalai, Erzsebet. 1990. "Az uj elit." In Szalai, *Gazdasag es hatalom*. Budapest: Aula Kiado.
- Szelenyi, Ivan. 1988. "Socialist Entrepreneurs." Madison, Wisc.: University of Wisconsin Press.

YUGOSLAVIA

*Vladimir Stipetić**

Editors' Note: This chapter was written before political developments in Yugoslavia in the summer of 1991 overwhelmed attention to economic issues. The discussion herein reflects the implementation of an agricultural reform program in early 1990. That year was a good one for Yugoslav agriculture; crop yields were satisfactory, and the country enjoyed a good level of food supply. The political disintegration of the country, however, stopped agricultural reform. In 1991, political turmoil and civil war created very serious problems for agriculture, and it is difficult to assess the actual situation. Projections for 1991 were very promising, especially for wheat production. The continuous fighting in the major producing areas interrupted the harvest and led to considerable agricultural losses. Fuel shortages also limited agricultural production even in the areas not directly affected by military operations. Internal trade relations have broken down and there are serious difficulties in foreign trade. In some areas food shortages are severe. At this moment, the Yugoslav economy and agriculture resemble a war economy and the future is unpredictable.¹

Yugoslavia was in deep economic crisis during the 1980s, and the situation was aggravated by political turmoil. Economic growth slowed to a standstill. Building activity declined, the purchasing power of the population shrank,² retail sales fell, and tourism stagnated after 1985. Unemployment rose and increasing numbers of well-educated Yugoslavs left the country. Profits in socialized industries fell, as did salaries and productivity. The creeping inflation of the 1960s and 1970s erupted into hyperinflation in the 1980s, reaching four-digit levels in 1989 (1,356 percent)(SJC 1990, p. 217). Foreign currency earnings stagnated leaving foreign debts at an intolerably high level.

Those trends had a profound impact upon the social behavior of the population. After decades of rising personal incomes, living standards fell, particularly those of people on fixed salaries and pensions. A few macroeconomic facts presented in tables 12-1 and 12-2 illustrate the dimension and depth of the Yugoslav economic crisis of the 1980s.

The "new socialism" of Premier A. Markovic was designed to arrest the decline of the 1980s. Until overtaken by the escalating political and military conflict among republics in 1991, the program showed positive results. In 1990, exports increased, domestic prices and the exchange rate both stabilized, and the dinar became convertible for practical purposes. The foreign debt was considerably reduced, imports were liberalized, and gold and currency reserves

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¹ Much of the information concerning the current situation was supplied by Prof. Sandor Somogyi, University of Novi Sad, Yugoslavia.

² In 1988, the index of net real income per person employed in socialized industries was 228 (1955=100), almost a third lower than in 1979 (when it was 323, according to official data). The index of net real income for pensioners was 277 in 1988 (1955=100), 18 percent lower than in 1979 (SJC 1990, p. 98).

increased. The deflationary policy, however, lowered domestic demand, and brought down indexes of industrial production, retail sales, construction, catering and other activities.

THE AGRICULTURAL SECTOR OF THE ECONOMY

In 1988, agriculture employed approximately 17 percent of the labor force and constituted 11 percent of GNP. The importance of agriculture is much higher than those figures would suggest, since 54 percent of total population (compared to 79 percent in 1948) lived in rural areas in 1981. Yugoslav agriculture is bimodal, with both socially-owned, large farms and private (hereafter often referred to as peasant) smallholders. The socialist sector produced 36 percent of total agricultural production in 1988, with 16 percent of arable land and 12 percent of the agricultural labor force.

The rate of growth of agricultural production in the last decade has dropped to only one-quarter of the rate obtained in the 1970s and one-sixth of the growth realized from the mid-1950s through the 1960s (table 12-3). The socialist sector of the agricultural economy has shown a considerable decline in the rate of output growth but the real stagnation has occurred in the private sector. There was no growth in the private sector during the 1980s. After stagnation during the collectivization drive (1947-53), total Yugoslav agricultural production accelerated in the 1950s and 1960s, and slowed thereafter to very low levels in the 1980s. The main reason for the overall slowdown is the poor performance in the peasant sector that dominates total production.

The stagnation of private agriculture in the 1980s was not due to the explicit discrimination against it that characterized past policy. Rather, the slowdown resulted from many long-term tendencies that together created the current state of Yugoslav agriculture. Since Yugoslavia was only partially collectivized, the agenda for its transition is different from that of its neighbors in Central and Eastern Europe.

LAND POLICY

Yugoslavia has approximately 14.2 million hectares of agricultural land, about 55 percent of its total territory. Close to half of this agricultural land is arable, including plowland, orchards, vineyards, and greenhouses. Much of the agricultural land is on steep slopes and forest areas, and erosion and degradation of quality are serious problems.

Agricultural area has declined considerably, especially since 1960. Between 1960 and 1988, 6.5 percent of agricultural land left production, with the largest reduction in plowed land, particularly of fertile fields in river valleys. An additional 8-10 percent of arable land remains unused ("fallow," according to the statistical terminology, but quite likely abandoned by owners), and the decrease in agricultural land area may be more than the statistics reveal.³ Poor supervision by absentee landowners may contribute to the aforementioned erosion and degradation of quality.

³ The counties prefer not to "lose" the land, since taxation is heavier on plowland than on meadows or pastures.

Table 12-1. Yugoslav Economy Average Annual Growth Rates, Selected Periods, 1953-89
(percent)

<i>Item</i>	<i>1953-65</i>	<i>1965-79</i>	<i>1979-89</i>	<i>1953-89</i>
GNP (fixed constant prices)	7.5	6.0	0.6	5.0
Population	1.10	0.94	0.67	0.92
GNP per capita	6.4	5.0	-0.1	4.0
Employment	5.9	3.1	1.8	3.7
Unemployment	10.3	7.5	4.8	7.7
Unemployment (percent of work force)	4.5	7.3	13.5	7.4
Inflation	8.6	15.1	123.0	31.1
Volume of:				
exports	12.6	4.8	2.2	6.9
imports	8.6	8.7	-1.2	5.0

Source: Author's calculations from SGJ various volumes.

Table 12-2. Selected Yugoslav Trade Data, 1965, 1979, 1988
(millions of U.S. dollars)

<i>Item</i>	<i>1965</i>	<i>1979</i>	<i>1988</i>
Export of goods	1,042	6,794	12,779
Import of goods	1,300	11,018	13,329
Foreign debt	1,243	14,952	20,220
Balance of Payments			
Receipts	1,346	14,146	22,050
Payments	1,495	18,147	20,377
Net	-148	-3,649	+1,673

- Net payment

+ Net receipt

Source: SGJ 1967, 1982, 1990.

Table 12-3. Yugoslav Population and Agricultural Production Annual Growth Rates, 1955-89
(percent)

Item	1955-57	1967-69	1977-79	1955-57
	to 1967-69	to 1977-79	to 1987-89	to 1987-89
Total population	1.05	0.94	0.70	0.90
Agricultural population	-1.5	-4.1	-3.7	-3.0
Agricultural labor force	-1.4	-4.0	-2.9	-2.7
Agricultural production	3.5	2.4	0.6	2.2
Peasant holdings	2.1	1.6	0.0	1.3
Socially-owned farms	14.2	5.2	2.9	7.8
Agricultural production per capita	2.5	1.4	0.1	1.3
per agricultural worker	5.0	6.8	3.6	5.0

Source: Author's calculations from SGJ, various volumes.

Problems related to land use and protection have increased public awareness of the need for proper land management. Since 1986, several republics have passed laws on land policy (prohibiting, for example, the siting of new roads on arable land if there is an alternative), but the legal framework supporting rational use and protection of land remains weak.

After the unsuccessful attempt to collectivize agriculture (1947-53), the agrarian policy of Yugoslavia from 1957 favored a dual (bimodal) organization, in which socialized agriculture was given preference, but peasant farms were accepted. Agrarian policy after 1957 was based on three main pillars: (a) accelerated growth of agricultural production, to be accomplished through greater investment in agriculture and repudiation of the past confiscatory terms of trade that the agricultural sector faced; (b) the introduction of new agricultural technology into backward Yugoslav agriculture (this policy favored the socialized sector by giving collective farms preference in access to modern inputs); and (c) mobilization of savings of private individuals for investment in their peasant farms.

The preference given to socialized agriculture is reflected in the growth of collective farms from 21 percent of agricultural land in 1957 to 32 percent in 1988. There was a corresponding decline in the proportion of land held privately in peasant farms, although these farms remained (and are today) the dominant tenurial form; two-thirds of total agricultural land is privately owned. The size and growth of the socialized and peasant farms are indicated in tables 12-4 and 12-5.

Although 32 percent of agricultural land in 1988 was in the socialist sector, only 20 percent of the more intensively used arable land (plowland, orchards, vineyards, and greenhouses) was socially owned. This discrepancy derives from the fact that many pastures are still communal property and thus belong to the "socially-owned sector," even though they are in private use. The 2.7 million hectares of pasture in the communal ownership, (almost 20 percent of the total agricultural land) are poorly managed. These pastures are a huge potential

resource that might provide a sizeable quantity of high quality lamb and goat kids' meat for the European market.

The distribution of communal and private holding varies by regions. For example, in the Danubian plain, 42 percent of land is collectively held, and in the mountains of Montenegro, only 6 percent. Only 2 percent of Yugoslav agricultural land is irrigated, and this area is largely in the private peasant sector. Yugoslavia has avoided the huge and uneconomic investments in capital-intensive irrigation of other socialist countries, but has also foregone the benefits of a more modest and rational investment in irrigation. It is likely that irrigation will be a fruitful area for investment in the future.

Table 12-4. Peasant Farm Ownership in Yugoslavia, 1931, 1960, and 1981

Farm Size (ha)	Number of Farms (thousands)			Total Land (thousand ha) ^a			Average Farm Size (ha)		
	1931	1960	1981	1931	1960	1981	1931	1960	1981
Less than 2	710	916	1,290	743	894	1,265	1.0	1.0	1.0
2-5	698	954	820	2,454	3,182	2,810	3.5	3.3	3.4
5-10	420	564	440	3,084	3,933	3,121	7.3	7.0	7.1
More than 10	241	184	126	5,139	3,091	2,047	21.3	16.8	16.3
Total	2,069	2,618	2,676	11,420	11,100	9,243	5.5	4.2	3.5

a. Includes privately-owned forests.

Source: Agricultural censuses presented in Stipetić 1990, p. 35.

Table 12-5. Number and Size of Socially-Owned Agricultural Holdings in Yugoslavia, 1955-88

Year	Number of Holdings	Number of Workers (thousands)	Arable Land		Average Size (ha)
			(thousands of ha)	(ha/ worker)	
1955	8,366	175	842	4.8	98
1960	5,121	197	1,033	5.2	202
1965	2,750	211	1,413	6.7	550
1970	1,925	196	1,419	7.2	774
1975	2,363	186	1,535	8.2	650
1980	3,186	200	1,645	8.2	516
1985	3,521	231	1,695	7.3	481
1988	3,324	245	1,741	7.1	524

Source: Author's calculations from SGJ 1990.

LABOR IN AGRICULTURE

The proportion of agricultural workers in the total labor force has fallen since World War II from 75 percent to 21 percent. In absolute numbers, the agricultural work force by 1986 was one-third as large as in 1941. The changing demographic structure of rural areas and the migration abroad of many rural youths has left agricultural production more and more in the hands of aging farmers, almost one-fifth of whom are illiterate.

As in Hungary, the majority of those who have left agriculture have continued to live in villages (see Szelenyi and Szelenyi, this volume). Geographically dispersed industry, created in order to minimize the costs of industrialization, has opened opportunities for part- or full-time nonagricultural work for rural people. Approximately 60 percent of all peasant farmers are part-time farmers, and they hold one-third of the private arable land. Increased earnings from nonagricultural activity kept rural construction and purchase of consumer durables brisk following rural electrification in the 1960s.

Improved opportunities for nonagricultural work have reduced demand for privately held land and increased demand for labor-saving machinery. Even after a fall in labor intensity, however, the average peasant farmer worked only three hectares, and the collective farm employee only slightly less than nine hectares.

The decrease in the number of agricultural workers has not been accompanied by consolidation of land holdings and increase in farm size. For much of the postwar period, the maximum legal farm size was ten hectares, and not until 1989 was the limit raised to 35 hectares. Prior to 1989, peasants with land holdings larger than ten hectares had to sign the excess over to state and collective farms.

Ceilings on farm size reduced the demand for agricultural land despite its relatively low price. Larger farmers preferred to rent, since it was easier to consolidate a holding through rental contracts. Much of the demand to purchase land now comes from urban people building weekend homes. In most cases, peasants desiring to purchase land cannot get credit or mortgages.

Table 12-6. *Land and Labor in Yugoslavia, By Sectors, Selected Years 1961-88*

Year	Labor in Agriculture (thousands)			Arable Land Per Worker (ha)		
	Total	Socially- Owned Farms	Peasants	Total	Socially- Owned Farms	Peasant Farms
1961	4,692	235	4,457	1.78	4.09	1.66
1971	3,903	201	3,720	2.09	6.34	1.86
1981	2,488	191	2,297	3.17	7.65	2.80
1988	2,070	176	1,894 ^a	3.75	8.65	3.29

a. Estimate

Source: SGJ 1965, 1974, 1984, 1990. Arable land per worker calculated by author.

FARM HOLDINGS IN YUGOSLAVIA

In 1988, there were 3,324 large socially-owned farms, with an average size of 533 hectares of agricultural land and 53 permanent workers employed per farm.⁴ In contrast to the trend of falling farm numbers in developed market economies, the number of farms in Yugoslavia has increased during the 20th century. In 1931, there were 2.1 million farms with the average size of 5.5 hectares. According to the census of 1981, there were 2.7 million peasant farms with an average size of only 3.5 hectares. Yugoslavia, which is approximately the same size as the United Kingdom, has 10 times as many farms.

Peasant farms are fragmented as well as small. According to the data from the agricultural census in 1960, there were 7.9 separate plots of land in each peasant farm, often unconnected by roads and sometimes far removed from each other. The main reason for fragmentation is the inheritance law, by which every child has the right to claim one equal part of the land of his or her deceased parents. The consolidation of holdings that started in the 1950s and 1960s stopped in the late 1970s, and remains minimal today.

Land and credit policy have created the current Yugoslav agrarian structure: a small number of medium-to-large farms and a large number of small, fragmented peasant holdings. Changes in land and credit policy will be essential for creating a more viable future structure.

CAPITAL-INTENSIVE INPUTS: LIVESTOCK, MACHINERY, AND FERTILIZER

Livestock numbers in Yugoslavia remained roughly constant between 1960 and 1980, and fell between 1980 and 1988 by about 10 percent. The aggregate figures merge a substantial increase in numbers in the socialist sector with a decrease in the private sector. Despite the change in relative share, the private sector retains about 80 percent of all livestock. The decline in livestock numbers on private farms is due, in part, to instability in export markets for meat, and to a decline in shipments to the European community. The increased income from off-farm employment has allowed private households to drop the labor-intensive ownership of one or two cows.

Until 1965, private peasants could not buy new tractors, and had access only to used ones released from the socialist sector. The state monopoly in the sale of agricultural machinery forced peasants into contractual relations with the socialist sector. Since 1965, peasants have been legally free to buy machinery. Markets for all tractors, combine-harvesters and other machinery are free, and mechanization increased markedly after 1965.

The tractor has become the status symbol for many farmers, and mechanical traction has largely displaced animal draft power. Many tractors are used only during a small period of the year. On peasant farms now, there is an average of 3.2 hp per hectare, and this represents a significant overinvestment in mechanization, with resulting reduction in efficiency.

⁴ *Editors' Note:* These are considerably smaller in land area and employment than collective farms elsewhere in East/Central Europe.

Table 12-7. Livestock Ownership in Yugoslavia, Selected Years 1960-88

Year	Total (thousands) ^a	Socially-Owned (percent)	Peasant-Owned (percent)
1960	5,506	8.8	91.2
1965	5,363	9.3	90.7
1970	5,213	8.5	91.5
1975	5,439	8.4	91.6
1980	5,535	12.5	87.5
1985	5,275	16.4	83.6
1988	5,077	18.2	81.8

a. Livestock totals expressed in "standard unit" weight (500 kg).

Source: SGJ 1990, p. 103.

In contrast to the overuse of mechanical power, fertilizer is underutilized. Despite an increase in recent decades, fertilizer use is still among the lowest in Europe. The level of consumption on the socially-owned farms is on the European level—254 kgs of plant nutrient content per hectare of arable land and permanent crop, but on peasant land is only 104 kg/ha. Yugoslav price and allocation policy thus did not promote the overuse of fertilizer so common in the rest of the region. The decline in animal numbers and the supply of manure, to preserve soil fertility may increase demand for mineral fertilizer in the future. Fertilizer markets now function with no institutional constraints.

Table 12-8. Consumption of Fertilizers in Yugoslavia, 1935-88
(thousands of metric tons)

Period	Average Annual Consumption of Plant Nutrients				Per Hectare of Arable Land (kg)
	N	P ₂ O ₅	K ₂ O	Total	
1935-39	0.6	3.4	0.9	5	0.6
1951-55	10	11	9	30	3.6
1961-65	145	123	121	389	47.0
1971-75	344	187	166	697	86.3
1981-86	466	252	250	968	123.1
1986-88	504	268	258	1,030	132.9

Source: Enciklopedija Jugoslavije 1990.

AGRICULTURAL PRODUCTION

Yugoslavia, in common with other Central and Eastern European countries, has had declining agricultural growth since 1960. Growth of gross agricultural output averaged 3.1 percent annually in the 1960s but slowed to less than one percent annually in the 1980s. Among the livestock products, poultry production grew most, and dairy and pork production least. The

changing commodity composition of output was influenced substantially by demand, since the Yugoslav mechanism of price intervention allowed considerable scope for market activity.

Yugoslav grain yields are approximately average for the Central and Eastern European region, i.e., lower than in Western Europe but higher than in the USSR. Livestock yields, particularly in the dairy sector, are considerably behind the rest of the region. In 1988, with the average milk yield per cow of 1,911 liters of milk annually, Yugoslav milk yields were lower than Soviet average yields. Even with high costs for transport of fresh milk, imported milk is cheaper in border areas, and Yugoslavia imports much of its domestic consumption of processed dairy products. Productivity in the rest of the livestock sector is not as low as in dairy, but feed conversion rates are relatively low. Yugoslav agriculture shows potential for significant improvement of yields of both crops and livestock from the most recent levels (tables 12-9 and 12-10).

Real incomes rose continuously between 1953 and 1980 by approximately 6.4 percent annually in the first half of the period, and about 5.0 percent annually in the second. The income elasticity of food measured from 12,500 family budgets in 1963 was 0.76. By the 1980s, it had fallen to 0.42 (Stipetić and Tričković 1980).

DEMAND FOR FOOD

The share of food in total personal consumption fell from 60.9 percent in 1953 to 38.9 percent in 1989. The corresponding figures for tobacco and beverages were 10.3 percent in 1953, and with heavier taxation on beverages (5.6 percent in 1989). A number of changes in consumption patterns have accompanied the fall in the share of food; for example, wheat has replaced maize as the primary food grain. Substitutions in the diet correlated temporally with income growth. The economic crisis of the 1980s slowed dietary change, and reversed it in the case of several foods.

Since World War II, consumption of grains, potatoes, and beans has declined, while that of fresh vegetables, fruits, meat, fish and fats has increased. The consumption of meat in Yugoslavia increased considerably in the postwar period, but at approximately 58 kilograms per capita (depending on methodology of measurement), consumption is considerably less than in other countries of the region. This reflects Yugoslavia's relatively lower per capita income, historic dietary patterns, and the absence of the very large direct price subsidies for meat present in other countries of the region.

AGRICULTURAL MARKETS AND PRICES

Domestic agricultural markets have been almost free since the mid-1950s, and state intervention has been indirect. Markets, however, were far from perfect. Production for personal consumption is still quite important; it is estimated that only about 55 percent of the total peasant production comes to the market, compared with 90 percent of the production of the socially-owned farms (Stipetić 1990).

Table 12-9. Average Yields of Important Crops in Yugoslavia, 1909-89
(tons per hectare)

Period	Wheat	Maize	Tobacco	Sugar Beet	Potato
1909-31	1.04	1.48	1.13	22.3	7.5
1926-30	1.14	1.36	0.8	16.0	5.2
1936-40	1.19	1.75	1.03	19.9	6.4
1947-51	1.20	1.62	0.83	15.0	6.9
1957-61	1.62	2.14	0.87	25.3	10.2
1967-71	2.42	2.98	0.86	36.2	8.8
1977-81	3.21	4.17	1.27	41.9	9.0
1982-86	3.55	4.79	1.23	42.1	9.2
1987-89	3.52	2.85	1.14	40.3	7.8

Source: *Enciklopedkija Jugoslavije* 1990.

Table 12-10. Livestock Yields in Yugoslav Agriculture, Selected Periods 1936-88

Period	Milk (liters per year)		Production of Meat in Live Weight (kg/year)		
	Milking Cows	Sheep	Sow	Cow & Heifer	Sheep
1936-40	1,050	22	580	99	15
1947-51	970	20	523	92	13
1957-61	1,099	25	603	130	14
1967-71	1,192	28	712	174	15
1977-81	1,528	30	775	213	17
1982-86	1,701	36	785	224	23
1987-88	1,770	38	777	223	23

Source: *Enciklopedkija Jugoslavije* 1990, pp. 377-99.

Three separate trading channels dominate marketing. Relatively large state marketing organizations buy much of the output of the private sector since compulsory deliveries were abandoned in 1952. These organizations have had access to credit, and have been able to offer cash for delivered goods. It was convenient for most farmers to use this channel and quantities sold have increased considerably in the past 49 years.

In the period 1982-86, 45 percent of the total wheat and rye production was marketed through the state marketing organizations (compared with 22 percent in the period 1957-61). Twenty-seven percent of maize is marketed through state organizations. The proportion of milk marketed through these channels is increasing, but it is still only about 30 percent. About 38 percent of pigs and 64 percent of cattle are marketed through state organizations. Much of the food purchased by the state marketing organizations is sold through the state retail food stores, although some is exported.

A second important marketing channel is the network of urban markets where peasants and small-scale traders sell directly. Every city of Yugoslavia has such a market, and larger

cities have several. Anyone can sell at these markets; there are no rules prohibiting trade as "speculation" as there are in more ideologically constrained countries. Prices move to clear markets. Teams of small-scale traders transport regional and seasonal produce to these markets throughout the country. Approximately two-thirds of marketed fruits and vegetables are sold in these "green markets."

The third major marketing channel serves rural people, providing goods for consumption and inputs for food production. In these village markets, one can buy hundreds of small items, such as seed, seedlings, spice, hay, etc. Agricultural trade in Yugoslavia is lively, and there is much interchange between and among markets. There are active private markets in villages, with tradesmen offering to buy any quantity of goods produced, often at favorable prices.

Table 12-11. Average Annual Deliveries of Staple Agricultural Products in Yugoslavia, Selected Periods 1947-88 (thousands of tons in the period)

Commodity	1947-51	1957-61	1967-71	1977-81	1982-86	1987-88		
						Total	Socially-Owned (percent)	Peasant-Owned (percent)
Wheat and rye	740	790	1,813	2,205	2,648	3,098	53	47
Maize	790	615	1,099	1,758	3,054	2,290	44	56
Tobacco	21	32	43	60	67	70	6	94
Potato	199	163	162	155	179	127	9	91
Apples	57	19	38	60	43	111	94	6
Grapes	..	96	159	354	396	313	44	56
Pigs	21	250	277	454	403	391	61	39
Cattle	74	254	408	471	429	330	32	68
Milk	145	288	488	1,306	1,408	1415	24	76
Poultry	—	7	38	116	147	173	94	6
Eggs (millions)	—	349	382	939	1,309	1,351	93	7

— Not available.

Source: Author's calculations from SGJ 1956-1990.

What is the role of the government in Yugoslav food markets? The federal government guarantees minimum prices for major commodities such as wheat, corn, soya, sunflower seed, tobacco, sugarbeet, pigs, and cattle of specific quality. This policy has been in place for more than 25 years. Minimum prices are set in principle on the average costs of production on large, socially-owned farms, where the costs of production for cereals are lower than on the peasant farms. In 1965 the government tried unsuccessfully to connect domestic minimum prices with world market prices, but even at that time domestic costs were higher than world prices. Since the late 1960s, the support prices for wheat and corn have been set at least 15 percent above world prices at the border (that was secured by import duty), plus transportation costs to Novi Sad, far away from the Adriatic ports.

This pricing policy opened an era of protection for Yugoslav agriculture. Subsequent increases in support prices became necessary to keep farm incomes at acceptable levels despite inefficiency in production. With stabilization of the exchange rate in 1990, it became possible to compare domestic prices to world levels. The minimum guaranteed price for the 1990 harvest for soft wheat was 1.93 dinars/kg (\$162/ton), to which republics could add a "premium" of 0.57 dinars/kg; bringing the minimum price to \$210/metric ton. Farm lobbyists attacked these prices as too low. Other support prices were set at "parity" with the wheat price. Agricultural protection was thus quite high. Since Yugoslavia is a member of the GATT, resolution of the Uruguay round could bring significant changes in price support.

The main objectives of Yugoslav agrarian policy have been to stimulate growth and stabilize production. Subsidies for inputs and price premia have been the primary instruments for intervention in markets. Over time, the role of the federal government has declined and that of the republics has increased. Even before the most recent worsening of inter-republic tensions, a trend toward increasing protectionism at the republic level was discernible. Input price subsidies (for fuel, fertilizer, and other inputs) have been paid primarily from the federal budget. Producer price premia have most recently come from republic budgets. These forms of subsidy have been more important in Yugoslavia than the direct consumer subsidies of other countries of the region.

Reduction in subsidies is an urgent task of Yugoslav agricultural policy. The long-term solution depends on the political relations worked out between and among republics, and on progress in achieving higher productivity.

INVESTMENT IN AGRICULTURAL PRODUCTION

Lack of investment, especially in the private sector, explains much of the slowdown in agricultural growth in the 1980s. Table 12-12 shows the trend in investment as a share of GNP in agriculture in the given ownership category, either social or private. The share of total investment channeled to the private sector increased from 1957 to 1988, but investment relative to the value of output remained considerably lower in the private than in the socialist sector. The increased investment in peasant agriculture in the 1970s can be attributed to favorable terms of trade for agricultural products in the internal market and government regulation of credit markets by which the banks were obliged to channel part of their credit toward agriculture and the peasant economy. Those measures, however, were short-lived. The surge in the late 1980s in peasant capital expenditure for agriculture was financed mainly by cash. Credit played a minor role.

Peasants invested primarily in agricultural machinery and only to a lesser extent in livestock, irrigation, and other long-term fixed investments. The domestic farm machinery industry was protected by tariffs and licenses until 1986. Since that year, when barriers to imports were reduced, purchase of foreign machinery has increased considerably.

AGRICULTURAL EDUCATION AND RESEARCH

Agricultural research and education are poorly developed in Yugoslavia. Peasants traditionally learned farming from their grandparents, not in schools. The remnants of this

situation are still present in the Yugoslav peasant economy; the agricultural population represents the last reserve of illiteracy in Yugoslavia.

Bright rural pupils often seek to escape the illiteracy of the village. Agriculture thus faces negative selection, as only those who find no other place for themselves stay in the field. Authorities have been forced to close secondary agricultural schools because of declining enrollment. Demand for higher agricultural training in agronomy or veterinary science is also low. Less than 6 percent of the total number of university graduates obtained degrees in agronomy or veterinary science between 1945 and 1985. These are startling figures in a country in which agriculture employs at least 20 percent of the population.

Funds are misallocated in agricultural research, and this further hurts the growth rate of agriculture. Many institutions are poorly financed. Since research and development are regarded as two of the most productive investments in agriculture (Schuh, this volume), neglect of this field in official policy is particularly serious.

Table 12-12. Fixed Capital Investment in Yugoslav Agricultural Production, 1957-88
(percent of total national investment, yearly average)

<i>Ownership</i>	<i>1957- 1961</i>	<i>1962- 1966</i>	<i>1967- 1971</i>	<i>1972- 1976</i>	<i>1977- 1981</i>	<i>1982- 1986</i>	<i>1987- 1988</i>
<i>Investment in Agriculture</i>							
Total	14.9	10.2	6.9	6.4	5.8	7.3	8.2
Socially-owned	10.5	7.5	4.4	3.3	2.8	4.0	3.1
Peasant-owned	4.4	2.7	2.5	3.1	3.0	3.3	5.1
<i>Structure of Total Agricultural Investment (percent)</i>							
Socially-owned	70	74	66	52	48	55	43
Peasant-owned	30	26	34	48	52	45	57

Source: Author's calculations from SGJ 1954-1990.

CONCLUSIONS

Yugoslav agriculture developed after the mid-1950s without the major institutional constraints that handicapped agriculture elsewhere in the region. By the 1980s, markets were well developed enough to challenge the state's dominance in retail trade in food. From the mid-1960s, Yugoslavia had largely free markets for inputs, including heavy agricultural machinery. In the 1980s, with the liberalization of imports, foreign competition brought selection and lower prices in product and input markets. In the past three decades, therefore, there was a process of gradual liberalization of the market forces.

These changes did not bring the desired supply response. The ceiling on the size of the private farm—now partially removed—and peasants' limited access to credit retarded productivity

growth in the private sector. Some recent improvements have been hampered in 1990 by strict deflationary policies.

The agenda for the Yugoslav agricultural transition is thus part restructuring, as in other countries of the region, and part old-fashioned development. The restructuring component pertains particularly to the financial institutions that serve agriculture and the need to stimulate the flow of commercial credit to the private sector. In addition, land markets need to become more active.

The more traditional task of development will require investment in human capital, agricultural research and extension, and physical infrastructure. The returns on this investment could be substantial, but productivity growth will be a lengthy process. Political stability and peace are preconditions for economic progress.

REFERENCES

Enciklopedija Jugoslavije. 1990. s.v. "Poljoprivreda."

Schuh, G.E. This volume. "The Role of Government in Agriculture in Developed Market Economies."

SGJ. Annual volumes. *Statistički godišnjak Jugoslavije*.

Szelenyi, B. and I. Szelenyi. This volume. "Hungary: Social Effects of Agrarian Reform."

Stipetić, V. 1990. "Ekonomika pljoprivrede." In J. Sirotković and V. Stipiteć, eds., *Ekonomika Jugoslavije*. Vol. 2. Zagreb.

Stipetić, V. and V. Tričković. 1980. "Agriculture, Nutrition and Development in Yugoslavia." *Food Policy* 5(3), pp. 168-187.

BULGARIA, CZECHOSLOVAKIA, AND THE GDR

*Karl-Eugen Wädekin**

Apart from a common period under communist regimes, Bulgarian, Czechoslovak, and East German agriculture have relatively little in common. Until 1989, attempts to improve collectivized agriculture in the GDR and Czechoslovakia had little effect, and organizational changes in Bulgaria failed economically and socially.¹ Differences in policy became more pronounced after late 1989. Czechoslovakia and the GDR began a process of rapid change, the latter under the special circumstances of unification with the FRG. In Bulgaria, agricultural change has been slow, but may gain momentum depending on further political developments.

THE PAST: COMMON SOCIO-POLITICAL DOCTRINE WITH DIFFERENT APPLICATIONS

The main agrarian parallel between the GDR, Czechoslovakia, and Bulgaria was political; all three underwent full collectivization on the Soviet model. A negligible number of small and marginal individual peasant farms were left in the GDR and Slovakia, and some individual sheep herders, nominally associated with collectives, remained in the Bulgarian mountains. In addition, private plots, also referred to as "personal" or "individual" subsidiary mini-farms were left in each country, but the importance of these varied by country.²

Within the dominant socialized sector, agroindustrial integration was the order of the day in each country, although its implementation took different forms. Bulgaria stood out by exceeding the Soviet example in forming "agroindustrial complexes." Distinctions between state and collective ownership of agricultural assets ceased to have operational meaning. By the early 1970s, the country's total arable and perennial crop area was divided into 150 complexes of approximately 30,000 hectares each. In subsequent reorganizations the size of these units was reduced until they disappeared in late 1989 and early 1990. Agroindustrial integration in the

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¹ For an overview of agriculture in these countries, see the chapter "Agriculture" in JEC 1989 vol. 1, pp. 231-84 and also the country chapters in JEC 1989 vol. 2, pp. 152-290. The statistics used in this paper are mostly official CMEA figures, which pretend to be comparable but are not always so. In some cases FAO data are used.

² For details by countries, see Brezinski 1990 on the GDR; Grosser 1988, p. 62 and *passim* on Bulgaria; Lukas 1986 on Czechoslovakia; and Wädekin 1990, pp. 246-50 and *passim* (various countries). Other sources include Shmelev 1990, p. 2 and various chapters in *Individual'naya trudovaya...1990*.

GDR meant separation of crop and livestock farming. Livestock enterprises of only 20–30 hectares were supplied with feed from crop farms of 4,000–5,000 hectares on average. This form of organization was somewhat modified during the 1980s, and not emulated by other countries within the region. Farms in the GDR made little use of the intra-farm contracts promoted in the Soviet Union and Bulgaria, but they were encouraged to form contractual relations with other farms and enterprises (Schinke 1990, pp. 251–262). Agroindustrial integration in Czechoslovakia took the form of including nonagricultural production and employment on farms.³ Separate categories of state and collective farms remained in the GDR and Czechoslovakia, and the share of agricultural land in each differed. In the GDR the portion of total agricultural land in state farms never exceeded about 8 percent; in Czechoslovakia this was 30 percent, partly due to the redistribution of land previously owned by expelled ethnic Germans.

In addition to a wide range of organization and policy, the three countries differ in natural endowment, the relative importance of crops and livestock, and the role and place of agriculture in the general economy. The GDR and Czechoslovakia share a Central European climate, with warm summers (rarely hot and dry), and cool winters lacking long periods of heavy frost. On the whole, the natural conditions for agriculture are slightly better in Czechoslovakia than in the GDR. Bulgarian agriculture is endowed with a southern Continental climate, but the relatively greater mountainous area limits the amount of arable land. Only two-thirds of Bulgaria's overall agricultural land is arable or cultivated with perennial crops, compared with 80 percent in the GDR and 76 percent in Czechoslovakia. Fertile basins along the Danube and Maritsa rivers offer opportunities for irrigated farming. Approximately 30 percent of Bulgarian cultivated area is irrigated, compared with only 3–4 percent in the GDR and Czechoslovakia.

Pollution and soil erosion have inflicted severe damage in all three countries. Of Bulgaria's 4.6 million hectares of potentially arable land, about 17 percent is so eroded that it is no longer used. An additional 7 percent suffers from salinity and other damage related to poor drainage, and about one percent is polluted with heavy metals (Davidova 1991a). In the GDR, problems of water and wind erosion are serious, and industrial pollution, primarily in the southern districts, adds to the chemical pollution originating in agriculture, particularly in the huge livestock complexes (Stern 1990, pp. 108–114, 174, 194–95). The environmental problems in Czechoslovakia (Pehe 1990) are similar to those in the GDR, except that those associated with the concentration of livestock production are less severe. Agricultural pollution in the GDR, Czechoslovakia, and Bulgaria has occurred despite application rates of fertilizer, herbicides, and pesticides that are lower than in the highly industrialized countries of Western Europe.

The ability of nonagricultural sectors of the economy to supply agricultural inputs, as well as a country's general material and cultural infrastructure, are decisive elements for agricultural development. Czechoslovakia and the GDR inherited favorable industrial conditions

³ The share of "affiliated output" in the total output of collective farms rose from 10.4 percent in 1980 to 17.5 percent in 1985, and from 30 to 37 percent of their overall profit in the same years. These percentages were exceeded in some areas (Slepicka 1988a, pp. 9, 18; see also Slepicka 1988b).

after World War II, although infrastructure has since been neglected. Bulgaria may be still in the advanced stages of transition from an agrarian to an industrialized society.

Table 13-1 presents three basic indicators showing the place of agriculture in the economy at large. The substitution of capital for labor is least advanced in Bulgarian agriculture, as indicated by agriculture's larger share of total employment, and the slightly smaller share of agricultural fixed assets relative to total assets. Agriculture's share in net national income produced is greater in Bulgaria than in the other two countries. The share of agriculture in the GDR's employment did not decrease during the 1980s, in contrast to Bulgaria and Czechoslovakia.

In all three countries food storage, transport, processing, and trade are inadequate for a modern economy, and losses, particularly of perishable foods, are large. The countries differ with regard to the balance of supply and demand for food. In Czechoslovakia food markets were in approximate equilibrium before the recent changes. In the former GDR consumer markets were also approximately in equilibrium, and substantial imports of feed generated exports of animal products. In Bulgaria consumer food markets were farther from equilibrium, and tension between domestic demand and exportable surpluses was greater.

In all three countries grains dominated the crop sector, with maize more important in the south and wheat in the north. The importance of the main tubers (potatoes, sugar beets, and feed roots) increases on a gradient from south to north. Horticultural crops are important throughout, although more so in Bulgaria, where tobacco is an additional significant specialty crop (see *Statisticheskii ezhegodnik...1990*, pp. 374-91). With such different cropping patterns few yields can be meaningfully compared. Table 13-2, however, suggests that crop yields in Bulgaria lag considerably, especially for non-grain crops.

The composition of the livestock sector emphasizes the differences between Bulgaria, on the one hand, and Czechoslovakia and the GDR, on the other. Sheep are much more important than beef in Bulgaria. The intensity of the GDR livestock sector, both relative to labor and land, stands out; this was part of the reason for the country's net meat exports.⁴ Milk yields in the GDR and Czechoslovakia were below Danish and FRG levels, but meat productivity compared favorably. It is interesting to note that about half of Bulgarian meat production came from small private producers, and half from large state livestock complexes. Although the availability of total feed per animal (from both domestic production and imports) in Bulgaria appears to have

⁴ Official GDR (and even FAO) statistics did not usually include data on meat exports and imports; but according to a rare reference (ZMP 1990, p. 6), the country exported an annual average of 202,000 metric tons (slaughter weight) between 1985 and 1990. Regarding livestock density, there were 10 "cattle units" per agricultural worker in the GDR in 1988, against 8 in Czechoslovakia and 3 in Bulgaria. In the same year, the number of "cattle units" per 100 hectares of land units was 157 in the GDR (higher than in the FRG), against 117 in Czechoslovakia and 85 in Bulgaria. In this paper, a cattle unit values one cow at unity, one other head of cattle at 0.5, one pig at 0.25, one sheep or goat at 0.1 and one head of poultry at 0.02. A land unit puts a hectare of arable and perennial cropland at unity, and a hectare of meadows and pasture at one-fifth of its physical size. They are calculated from FAO 1984, tables 1 and 3.

Table 13-1. *Agriculture's Share of Labor, Fixed Assets, and Material Net Product in Bulgaria, Czechoslovakia, and the GDR, Selected Years*
(percent, comparable prices)

Country	Factor	1980	1988	1989
Bulgaria	Labor	24.6 ^a	18.7	—
	Fixed Assets	11.1	8.0	8.0
	Material Net Product ^b	16.6	12.6	12.7
Czechoslovakia	Labor	13.4 ^a	11.9 ^a	10.3
	Fixed Assets	8.8	9.5	9.6
	Material Net Product ^b	7.2	9.4	9.2
GDR	Labor	10.5 ^a	10.6 ^a	10.3
	Fixed Assets	10.3	9.9	9.8
	Material Net Product ^b	8.8	11.5	11.6

— Not available

Note: CMEA statistics for national income ignore part of the service sector. By Western notions of national product (including services), agriculture's contribution would be roughly 3 percent less than stated above.

a. Includes forestry

b. Net output calculated from rounded absolute figures in the source; for the GDR, includes forestry

Source: *Statisticheskii ezhegodnik...1989*, pp. 55, 62, 403-06, *Statisticheskii ezhegodnik...1990*, pp. 41, 43, 67-76. For labor in 1980: *Statisticheskii ezhegodnik...1982*, pp. 379-81.

Table 13-2. *Average Annual Yields for Selected Crops in Bulgaria, Czechoslovakia, and the GDR, 1981-89*
(quintal/hectare)

Crop	Average 1981-85			Average 1986-89		
	Bulgaria	GDR	CSSR	Bulgaria	GDR	CSSR
Wheat	38.5	48.6	46.6	41.1	50.7	49.6
Oilseeds	15.8	22.5	20.7	16.0	26.6	24.7
Sugar Beet	224.6	293.1	344.4	199.5	301.5	352.1
Sown Hay (perennial)	42.9	106.2	85.8	42.3	107.6	88.5

Source: *Statisticheskii ezhegodnik...1990*, pp. 386-91.

been approximately the same as in the other two countries, Bulgarian animal productivity was considerably lower, suggesting significant lags in other aspects of livestock management.⁵

⁵ Differing feed conversion ratios over time might play a certain role, but do not offer a sufficient explanation for the differences in the volume of livestock production. These ratios are, however, a problem in many of the countries of the region, and account for much of the overconsumption of feed grains. Czechoslovak statistics for 1988 give feed conversion ratios of 6.43 starch units per unit of meat (gain in live weight) for cattle, 2.38 for pigs and 1.63 for broilers, and .74 starch units per liter of milk (national average on state and collective farms (continued...))

SLOW GROWTH, EXCESS DEMAND, AND DECLINING INVESTMENT

Growth in output was the main goal in all three countries. In pursuit of domestic self-sufficiency in food, Czechoslovakia increased agricultural investment by 11 percent annually from 1970 to 1975, and 4.4 percent annually from 1980 to 1988. Investment declined 4 percent during 1989. Bulgaria's similar investment boom in the early 1970s (growing some 8 percent annually from 1970 to 1975) slowed in the late 1970s; only as late as 1988 was the 1980 nominal level of investment reached. Investment in GDR agriculture during 1970–75 increased more moderately and then declined; in 1988 it was below the 1975 level (*Statisticheskii ezhegodnik...*, various volumes).

According to the calculations of Thad Alton and others, net agricultural output (deducting intermediate products, depreciation, and current expenses except labor from gross output) grew appreciably between 1978 and 1987 only in the GDR. In Czechoslovakia net output stagnated, partly because of rising cost per unit of output. In Bulgaria net output has declined markedly since 1976 (Alton 1988 and 1989, tables 1.1, 1.2, and 1.3 in both works). These calculations may not sufficiently capture the rapidly rising costs per unit of input. Irrespective of input costs, however, it is gross output that determines the supply of food. In the period 1978–87, gross output increased in the GDR and Czechoslovakia, but decreased slightly in Bulgaria with large annual fluctuations. Growth in demand in response to increased wages was substantial, but in Czechoslovakia and the GDR growth in supply kept excess demand in check. In Bulgaria growth in demand exceeded growth in supply, and the food situation deteriorated. This was aggravated by efforts to enhance agricultural exports. Discontent among Czechoslovak and GDR consumers arose from comparison of the quality of products available to them relative to West Europeans rather than from food shortages, and political leaders felt little pressure for fundamental agricultural reform.

THE RELATIVE COSTS OF AGRICULTURAL PRODUCTION

Rising production costs, initially more or less disregarded, have become a central problem in socialist, especially in GDR and Czechoslovak agriculture. Increased use of capital has not been accompanied by adequate reduction in labor.

A direct comparison of East European and Western agricultural production costs is not informative because of artificial exchange rates and differing price structures. But a retrospective comparison at the time of the introduction of a common currency in the GDR and

⁵(...continued)

(*Statisticka rocenka...1989*, p. 321). These ratios are similar to those in the former GDR. While overall figures were not published for Bulgaria, in the big livestock complexes that account for much of the socialized meat production, the consumption of feed units in physical weight per unit of meat (gain in live weight) was 5.5 for pigs in 1990, and 3.6 for poultry (Davidova 1991a). The physical weight unit measure, plus the fact that only about 50 percent of livestock production is included, probably mean that the feed conversion ratios for Bulgaria are considerably worse.

the FRG deserves interest. The former GDR producer prices turned out to be between 40 and 65 percent higher than those in the FRG.⁶

The cost problems of East European agriculture can more meaningfully be assessed by comparing prices of main items of agricultural output to those of main inputs (including labor). A comprehensive comparison would require a major research effort beyond the scope of the present paper; a few examples may suffice here.

Wheat was very highly priced compared with the prices of some major inputs.⁷ For the average producer price of 1.26 metric tons of wheat, an average Czechoslovak public farm in 1985 could pay for a month of average hired agricultural work, whereas a FRG farmer had to spend roughly 6 metric tons for it. About 60 tons of wheat were sufficient to buy a 100 hp tractor in Czechoslovakia by the mid-1980s, while in the FRG more than 200 tons were required. The average cost of one metric ton of all types of pure nutrient content mineral fertilizer, however, was equal in both countries, 2.3 metric tons of wheat (for an average of all kinds of mineral fertilizer, pure nutrient content). One has to bear in mind that the price of wheat in the FRG (and the EC) is kept high by the system of levies. Czechoslovak grain prices relative to input costs are even higher when compared with major world traders. The price of meat relative to input costs is even more favorable to Czechoslovak producers than are grain prices.

Although such calculations vary for other main products and inputs, it may be concluded that the public farms in Czechoslovakia and the GDR (and most likely also in Bulgaria), faced terms of trade more favorable than those in most countries. During 1990-91, prices for inputs have risen faster than those for output in all three countries, and terms of trade have fallen. This change added great financial strain to the problems of socialist farming.

Relatively high output prices derived from high costs of production and a cost-based pricing mechanism. Why were costs so high? Energy use is part of the answer. A study of energy use in GDR agriculture shows heavy overconsumption (Hohmann 1988). It is likely that parallel studies on Czechoslovakia and Bulgaria would yield similar results. Even though the state-fixed price of energy in the past was low, overconsumption was costly to the economy.

Besides off-farm inputs, labor is the other main cost item and can more easily be compared. One would expect that the huge socialist farms, compared with West European family farms, would achieve great labor savings. They did not. GDR and Czechoslovak farms (including private plots) employed 16 workers per 100 hectares of land units.⁸ Bulgaria, with her greater share of natural meadows and pasture, employed 14, roughly equal to most West European farms with their notoriously small average size. Since yields per hectare and per

⁶ Oral information from East Berlin.

⁷ The following examples are in part derived from ECE/FAO 1988, pp. 65, 71, 90, 96, 100, 119, 123, 163, 175, and in part from oral information. For Bulgaria, see also the appendix to the decree of March 23, 1990 in *Durzhaven vestnik* 1990.

⁸ For a definition of land units, see note 4 above.

animal are lower in Central and Eastern Europe than in Western Europe, a comparison of labor productivity would be yet more unfavorable to these countries.⁹

The overmanning of large-scale farms, including their bureaucratized management, would not raise costs if labor in agriculture were cheap. As shown above, agricultural wages, if measured in terms of wheat and meat are lower than in the West. The lower wages, however, do not fully offset high numbers of workers and low productivity per worker. Labor productivity in agriculture is lower than in the rest of the economy (see table 13-1), and wages should be lower in agriculture, but this is not the case in the three countries. Because of near-parity of wages, low labor productivity in agriculture became a heavy burden on the rest of the economy.

PRICES AND SUBSIDIES

According to Marxist-Leninist theory, prices are determined by "socially necessary cost" (however defined), and in agriculture, also by the given natural endowment. Governments again and again allowed agricultural production costs and producer prices to rise. Similar commitment to cost-plus pricing prevailed in all three countries, but the GDR explicitly established a link between input and output prices, particularly after 1984 (Schinke 1990, pp. 199–208). Similar links prevailed in Czechoslovakia and Bulgaria, although the increases were not quite as great.

Although producer prices rose, governments prevented a parallel price rise in consumer prices for food. State subsidies bridged the gap and kept consumer food prices below actual farm production plus processing and distribution costs. Additional smaller subsidies kept the prices of industrially produced inputs and off-farm services below the actual costs. Repeated canceling of farm debts was also a kind of subsidy. Bad credits were thus de facto subsidies.

The direct consumer price subsidies paid between farm and retail shop are by far the largest part of the subsidies, and they increased substantially in the late 1970s and early 1980s. Even in Czechoslovakia, the increase in the official retail price for meat and meat products in 1982 only temporarily alleviated the subsidy burden. The Czechoslovak statistical report in 1989 for the first time gave an official figure for food price subsidies: 35.0 billion koruna, or 8 percent of the state budget (*Hospodarske noviny* 1990; *Statisticka rocenka...1989*, p. 156). The absolute sum of food price subsidies in Czechoslovakia equalled the total investment in agriculture and forestry in 1988 or 8.4 percent of the state budget expenditures (*Statisticheskii ezhegodnik...1989*, p. 165). In the GDR, the total food price subsidy amounted to 31.9 billion marks in 1988, or 12 percent of the state budget, exceeding the 6.0 billion marks investment (in 1988) by five times (*Statistisches Jahrbuch 1989*, pp. 261, 269).¹⁰ The Bulgarian subsidy for agricultural production was 1.7 billion leva in 1988 (Davidova 1991a), or 10 percent of the state budget expenditures. If indirect agricultural subsidies were included, the sums would be yet more staggering.

⁹ For the GDR/FRG case, see Hohmann 1985, p. 131.

¹⁰ According to oral reports, the subsidy was 38 billion East German marks in 1989; for every mark spent on food, the consumer received 1.48 marks in subsidies.

CHANGES IN THE ORGANIZATION AND ECONOMIC ADMINISTRATION OF AGRICULTURE UNDER THE OLD REGIME

The strategy to improve agricultural performance under the old regime relied fundamentally on the integration of farms into huge agro-food complexes incorporating modern technology and on higher producer prices. Increased farm autonomy was also proclaimed if not really granted, in combination with the streamlining of central planning.¹¹

All three countries also had waves in which restrictions on subsidiary plot and other private production were relaxed. By the mid-1980s the household sector accounted for about 10 percent of agriculture's total gross output in the GDR. For a period in the 1970s, efforts were made to eliminate household production in Czechoslovakia, but by the mid-1980s, this sector accounted for slightly more than 10 percent of production. Household production accounted for 25 percent of Bulgarian output (see footnote 2).

Table 13-3. *Private Producers' Share of Total Vegetable, Fruit, and Animal Production in Bulgaria and Czechoslovakia*
(percent)

Country	Annual Average 1986-89			1989		
	Potatoes	Vegetables	Fruit	Meat	Milk	Eggs
Bulgaria	57	41	50	48	24	47
Czechoslovakia	15	34	52	17	3	39

Note: Private producers (*V khozyaistvakh naseleniya*) include any of the population with private plots. 1989 figures are derived as residuals and are perhaps slightly overstated.

Source: *Statisticheskii ezhegodnik...1990*, pp. 390-392, 401, 403.

Organizational changes including experimentation regarding the role of the private sector, failed to arrest rising costs, but the problems were not considered of sufficient magnitude at the end of the old regime to require major changes in agrarian policy and institutions. Except for the aspect of production costs, the agrarian sector was not considered to be in a critical state by the pre-1990 Czechoslovak government. The belief that the existing system could be improved without major change was even stronger among the GDR communist leaders until 1989 (JEC 1989 vol. 2, pp. 242-45; vol. 1, pp. 250-51). The complacency of the Honecker *equipe* was echoed by Soviet Politburo member Y. K. Ligachev, when upon returning from his visit to the GDR in early September 1989, he praised GDR's agriculture as proof of the viability of socialist large-scale farming (*Sel'skaya zhizn*, September 15 and 16, 1989).

In Bulgaria the organizational measures of change during 1988-89 were particularly erratic, badly defined, and inconsistent. Davidova (1990) summarized the Bulgarian situation in early 1990 in the following way:

¹¹ For an outline of this strategy see the chapter by Cochrane and Lambert in JEC 1989 vol. 1, pp. 236-53.

Within one year and a half, people engaged in agriculture have changed the kind of organization in which they worked five times: agro-industrial complex; agricultural brigade with an enterprise statute; "principally new kind" of agro-industrial complex; firm; collective; and private farm. They felt lost in the meandering of rules and did nothing but wait for the next "fundamentally new" change.

It would have been surprising if these changes had resulted in a positive effect on agricultural production.

THE TRANSITION: COMMON PROBLEMS OF LAND RIGHTS AND FARM FINANCE

The ineffectiveness of the pre-1990 reorganizations made the reform-minded faction of the communist leadership in the three countries recognize the necessity for more serious change. They wanted it, however, to remain within the socialist system. This stage was only a short interlude in the GDR and Czechoslovakia, from the unbloody revolutions of November 1989 to the elections of 1990 (in March and June respectively), but it has been a long one in Bulgaria.

Greater efficiency of agricultural production and adequate supply of food to consumers are the common basic goals in all post-communist countries. Yet disputes on how to proceed have given rise to delays and inconsistencies in legislation and implementation. Reestablishment of private farming and fundamental restructuring of the remaining collective farms can proceed only gradually within an intermediate period. Historically, successful agrarian reforms have always taken a long time to formulate and implement; the post-socialist countries do not have the time such a process normally takes.

The textbook variety of a market economy exists nowhere, particularly not in agriculture. A textbook blueprint would in any case be unrealistic for the newly established economies and societies of Central and Eastern Europe. A blueprint does not matter as much as a basic orientation through which market mechanisms are introduced and allow scope for further development on their own. Agriculture during the transition particularly needs economic protection against foreign competition that is both powerful in itself and acts on international markets with prices distorted by innumerable national subsidies and trade barriers.

Peasants in Czechoslovakia and the GDR were not formally dispossessed. Many were pressured (sometimes illegally) to sell or donate land. In Bulgaria, many collective farm members were pressured in the late 1950s and early 1960s formally to sell (at a nominal price) or donate their land to the collective farm or the state. The problem at issue is not giving land back, but restitution of the rights of the legal proprietor. The collective farm and its members were merely in possession of land, in illegal possession at that, because possession was based on injustice and force (see footnote 13).

It will not often be possible or advisable to restore exact landholdings. The state could offer compensation instead of restitution; but does the state have the money to pay compensation? And if so, how attractive is monetary compensation under inflation? Monetary shares of a given collective farm are hardly attractive when the collective's economic prospects are doubtful. In addition to land rights, unemployment presents a problem. Since the socialist farms employed too much labor, privatization or commercialization would release workers.

Finally, all three countries must establish a new credit and banking system entirely different from the earlier one. The new beginning was made a bit easier in Bulgaria, since much of the farm debt there was canceled in 1989. In Czechoslovakia, farm debt was not excessive prior to the transition. In the GDR, the state promised (in March 1990) subsidies out of the budget to ease the burden of those farms that had incurred their debts as a consequence of former state planning and interference in their production. The currency unification of July 1, 1990 halved the nominal debt burden, as all business debts were changed into deutsche marks at a ratio of 2 marks per deutsche mark.

The GDR adopted the whole FRG banking system. The main partner of former GDR farms is now the (formerly only West) German Cooperative Bank, which in the fall of 1990 merged with its GDR counterpart (the Bank for Agriculture and the Food Economy). As of January 1, 1990, Czechoslovakia set up a two-tier banking system; the state bank is to function merely as a central bank. Establishment of non-state banks was liberalized, and the first formed was Agrobank, a joint-stock company independent from the state. During 1987–89 Bulgaria established eight branch business banks. By April 1991, there were 78 banks, several of them doing business in agriculture, and one was private (T. Atanasova, *Zemia*, April 22, 1991).

It seems inevitable that agriculture will continue to be in large-scale but reorganized farms for quite some time to come because the number of farm workers willing and able to start family farms is limited. They will at best occupy less than one-quarter of the farmland in the foreseeable future. Private family farms may bring in a new element of competition but will not determine the overall structure in agriculture, even though more collective farmers might decide to become individual farmers, whether on an ownership or a leasehold basis.

Most of the state farms in the former GDR are located on formerly large estates expropriated under the pre-1949 land reform; there cannot be peasant owners to claim land. In Czechoslovakia, the share of state farms is greater, but many of them are located on land that formerly belonged to expelled ethnic Germans. Even if a greater percentage of collective farmers were to resume private farming, the sector of state and transformed cooperative farms is likely to retain more than 80 percent of the land in one juridical and organizational form or other in the near future. In Bulgaria, where the distinction between state and collective farms had little meaning, more than 90 percent of the agricultural land was owned by peasants before collectivization. The potential for large-scale restitution exists and many people seem to be interested in claiming land, but the actual course of the Bulgarian land program is as yet uncertain.

The legal status and organizational form adopted will be important. Experts on the GDR, Bulgaria, and Czechoslovakia have expressed the opinion that the existing collective farms are from three to five times too large and that the strict separation of crop and animal farming in the GDR was mistaken and should be changed. Spontaneous division of existing farms is occurring at the farm level, but whole collective farms will seldom be privatized this way. If smaller farm sizes become the norm, the new collective sector might comprise mixed farms of, say between 200 and 500 hectares each—a size similar to that of a West European larger-than-family private farm. The 30–60 families that formerly belonged to such farm sections will hardly all find employment there. Even though a considerable number of old people might retire and others might take nonagricultural employment or turn some enlarged private plot into part-time farming, the threat of unemployment will remain.

New farms may be private group farms or shareholding companies, if they are formed voluntarily by members and fit the new legal framework. In the GDR, there are no legal, ideological, or practical obstacles to large farms of any kind, except lack of agreement of members of a given previous collective farm. If, however, they want to continue collective farming, they must adopt and register a new charter that complies with the FRG law on cooperation. What form might a new, strictly voluntary type of collective farm take? Many expect that smaller cooperative farms will be identical to village communities and will be socially more coherent than before. In the eyes not only of inveterate communists, truly voluntary production cooperatives, smaller than the previous collective farms and based on shareholding, may also be considered private. Cogent proof of the economic viability of voluntary enterprises cannot be presented due to a lack of statistically relevant data. The viability of such new cooperative farms is uncertain, but they should not be excluded a priori.

THE RECENT REFORM PROCESS: BULGARIA

Unlike Czechoslovakia and the former GDR, Bulgaria should either increase food production and traditional agricultural exports (vegetables, fruit, and mutton), or reduce feed imports, or (preferably) both. Bulgarian agriculture still has great potential. With some help from mechanization, the traditional small-scale and labor-intensive production of fruit, vegetables, and livestock can increase the quantity and quality of production. The costs of production in Bulgaria could keep pace with the per unit output values; the overall incomes of peasant families need not decline.

After Zhivkov was forced to resign on November 10, 1989, another communist government came to power.¹² It soon called itself socialist and was replaced by a similar government in February 1990. Its "anticrisis program" of April 1990 called for private property and a free market for hard currency, but the government controlled consumer prices and kept them lower than could be expected under market pricing. The anticrisis program seems to have been more a preelection promise than a concrete action program and was announced before the drought and the full extent of the food shortages of 1990–91 were known. The overall situation was exacerbated by a fall in agricultural exports, which were put under quotas and licensing and were further restricted in November, 1990, and by a lack of convertible currency for chemicals and feedstuffs. After the Socialist (formerly Communist) Party in Bulgaria won the June 1990 elections, its representatives presented the proposal that within the collective farms the members should get an individually registered right to a share of land and the right to dispose at their own discretion of the results of their work.

The Socialist Lukanov government was followed by the government of Prime Minister Popov (who is not a member of the Socialist Party) in November 1990. The Popov government was under the strong influence of the Socialists, which had the majority in parliament. During the spring and summer of 1991, the government embraced privatization, but most of the former state monopolies continued to exist in various forms, particularly in wholesale and foreign trade and in food processing. Private enterprise has become active mainly as a "bazaar" type of petty trade.

¹² Much of the following subsection is based on Cochrane 1991 and Davidova 1991b.

After roughly one year of debate, a land law effective March 1, 1991, was adopted by parliament (*Durzhaven vestnik* 1991). It restored the right of ownership to former owners of up to 20 hectares in areas of intense cultivation and up to 30 hectares in other areas. Claimants will not receive the same land they lost, but are to be granted land of equivalent value in the same village area. Those who do not want to farm or to lease their land for agricultural production may receive monetary compensation instead. Claims have to be filed within one year, but the rules of implementation adopted in May 1991, seem to extend the deadline to two years. For a period of three years, owners may not sell land to private persons other than relatives.

In contrast to recent Soviet legislation, no distinction is made between property and possession, although the Bulgarian language also has the latter term (*vladane*).¹³ Compared with the May 1990 draft, the 1991 law is less restrictive in that owners who do not cultivate their land are not obliged to sell it to a collective or other public farm. Restitution applies to the property rights as they existed after the land reform based on the law of April 9, 1946. At that time, very few peasants had more land than the new law permits, as small-scale family farming had been the traditional type of Bulgarian agriculture.

The land law of 1991 was a first step toward privatization of agriculture. Without further action to transform the whole agro-food complex, it will retard rather than promote the modernization of the supply and production of food. The steps taken so far in this direction are far from sufficient. A decree in July 1990 introduced three kinds of producer prices: centrally fixed for purchases of some basic foods, centrally fixed minimum purchasing prices for some others, and free prices for the rest, primarily fruit and vegetables. The effect was to paralyze the legal agricultural markets. An effort was made in 1990 to reduce producer price subsidies, but in the end liberalization and the resulting rise in producer prices made the government raise the high consumer price subsidies so that the old overall price subsidy level was even surpassed. In practice, most consumer prices remained fixed during 1990 at a relatively low level.

Full liberalization of food prices, for producers as well as consumers, followed after February 1, 1991. According to the Minister of Finance, Ivan Kostov, 90 percent of all prices were freed from direct government interference (some energy prices excepted) (*Neue Zürcher Zeitung*, June 30/July 1, 1991, foreign edition no. 148, p. 13). In the event of food shortages, government intervention was expected if consumer prices of some basic foods exceeded set upper limits. Consumer prices continued to rise in the spring of 1991, and food shortages were alleviated but not overcome. According to Kostov, the overall price increased 123 percent in February but less than 2 percent in April–May, 1991. With new elections envisaged for autumn 1991, the political actors postponed further decisive steps in agrarian reform.

¹³ It is important to be aware of the distinction made by most European and the underlying Roman law—unknown in British and American law—between property (*proprietas*) and holding or possession (*possessio*).

THE RECENT REFORM PROCESS: CZECHOSLOVAKIA

Wages in Czechoslovak agriculture¹⁴ have been higher than in the rest of the economy, and this affects attitudes toward reform. If farm workers and the new peasants risk losing this privileged position, any reform measure tends to be discredited among them, even though it may be necessitated by the economic policy in general. Change of agrarian policy started after a coalition (communist and non-communist) government was formed in December 1989. It intensified after almost entirely non-communist governments came to power at the federal level as well as in the Czech and the Slovak republics after the elections of June 1991.

Many people in Czechoslovakia, including farm specialists, favor changing and improving the existing collective and state farms. Smaller units like those of the 1950s and early 1960s might be reestablished and coincide with the settlement pattern of village communities. Such units might be partly or wholly independent; they might be grouped around, and cooperating with, a "nucleus" collective or state farm, especially among livestock producers in mountain areas. The federal law on cooperative farms of May 3, 1990 stipulated the independence of cooperatives and the fact that shares may be issued to the individual members, making them co-owners participating more actively in the farm affairs and in the profits and the losses of their common enterprise. This process, which is already underway, favors the present collective farm members, and their specialists and managers in particular. The law of May 3, 1990 made it clear that since the agrarian reform of 1948, land has legally remained the property of the collectivized peasants. The 1948 deadline automatically excluded former landowners with large holdings as well as the great numbers of expelled ethnic Germans. This law generally granted members of collectives the right to leave the collective farm and become private farmers. According to opinion polls and interviews in early 1990, a maximum of 20 percent of cooperative workers were interested in becoming private farmers.¹⁵

In mountain areas of Slovakia, remnants of traditional small-scale farming persisted even under collectivization. During 1990, 106 out of 835 collective farms in Slovakia dissolved. Part-time farming in this area is likely to increase.

Discussion of the Czechoslovak land law proceeded throughout 1990; on May 21, 1991, it was finally approved by the federal parliament (*Agrarinformationsdienst Osteuropa* 1991). The law provides for the restitution of land collectivized after February 25, 1948 and before January 1990 or indirectly expropriated (through compulsion such as forced donation or sale). If land

¹⁴ The subsection on Czechoslovakia is based mainly on Schimmerling 1991, St'astny 1991, and Hudeckova and Lostak 1991, and *Agrarinformationsdienst Osteuropa* 1991.

¹⁵ In an opinion poll taken in January 1990, 14 percent of respondents working in agriculture showed willingness to become private farmers (Radio Czechoslovakia, Czechoslovak Television, January 29, 1990 monitored by Radio Free Europe, Munich, and recorded January 30, 1990). According to the Czech Minister of Agriculture, whose estimate was 10 to 20 percent, some of these might prefer a form of half-independent tenancy farming in cooperation with the public farms (*Sel'skaya zhizn*, June 15, 1990, p. 3) or part-time farming (often merely on enlarged household plots). Hudeckova and Lostak (1991) arrive at a range of 3-20 percent. According to St'astny (1991), more recent estimates of experts range between 1.5 and 5 percent; in Slovakia, by July 1, 1990, only 1.5 percent of the workers had applied for land for private farming.

cannot be restored to the owner, compensation shall be paid or other land shall be given. The deadline for filing such claims was December 31, 1991.

In contrast with earlier drafts, the law does not set rules beyond the law of May 3, 1990 on how the continuing collective farms should be transformed. The question of what shares of collective farm assets and other values should accrue to members who are not former landowners is thus left open.

On March 29, 1990, the Ministry of Agriculture announced the freeing of prices for food products in three steps. In early July 1990, food prices were raised administratively by between 26 and 100 percent. Further increases came on October 1, and at the end of 1990. The government that emerged from the elections of June 1990 accelerated privatization and prices were fully liberalized in January 1991. Food prices thereupon rose steeply but then leveled off. By February 1991, food prices were roughly 30 percent above the December 1990 level, which itself had been above the (high) average level of that year by the same percentage. Demand fell, especially for meat and milk. Consequently, animal numbers declined sharply. The decrease of crop production in 1990 was mainly due to unfavorable weather. It is likely to stagnate in 1991 for the same reason.

The Czechoslovak government took measures in 1990 to change the system of producer subsidy without abolishing it. These changes were implemented in May 1991. A subsidy program for newly formed private farms started at the same time, but at first it was limited to five counties. Subsidies now primarily benefit the processing industry to encourage modernization and rationalization. Prices that producers pay for industrially produced inputs, energy in particular, rose much more than agricultural state purchase prices. The sudden change put agricultural producers in a precarious financial position, which was only partly compensated by guaranteed support prices for selected products (wheat, rye, potatoes, milk, slaughter cattle). Support prices are set with a view toward regional and social problems.

Czechoslovakia is nearly self-sufficient in food. A protective system of domestic price regulations and foreign trade licenses will be needed if Czechoslovak producers are to retain their domestic and foreign markets. As long as Czechoslovak agricultural products were heavily subsidized, foods tended to be exported in various ways, among them direct purchase by Western tourists. Now, however, with rising prices and declining domestic demand, the country's agriculture is forced to export but is poorly placed to compete anywhere against imports at low world market prices.

THE RECENT REFORM PROCESS: THE GDR

In agriculture as throughout the economy, change in the GDR was abrupt.¹⁶ The GDR experience does not apply to other post-communist countries, since nowhere else have Soviet-type socialist economies been so totally exposed to Western competition.

Until August 1961, leaving the GDR via Berlin was not difficult and did not mean plunging into an alien cultural environment. Consequently, more farmers emigrated during and

¹⁶ The subsection on the GDR is to a large extent based on information generously provided by Professor Eberhard Schinke of the Zentrum für kontinentale Agrar- und Wirtschaftsforschung of the University of Giessen, Germany.

after collectivization than in other socialist countries. By GDR law, they remained proprietors of their land. On the basis of the land registers (except where these were destroyed or "lost" towards the end of the GDR), many refugee farmers or their heirs can claim back their land.

Beginning October 3, 1990 when the political unification process was completed, the laws of the Federal Republic and of the EC became valid in the former GDR, with a few exceptions and specific adaptations. Paramount in the food economy was the opening of the frontier and introduction of the convertible deutsche mark. The impact of Western competition in production, processing, marketing of food made itself increasingly felt already in the winter of 1989/90 and was reinforced by the attitude of Eastern consumers, which in many cases was founded more on psychology than on comparative quality or prices. Everything "Eastern" was scorned, and everything "Western" was coveted. During January–September 1990, the value of food deliveries from the FRG to the GDR increased sevenfold (to 3.3 billion deutsche marks), while in the opposite direction, it increased by only 7.3 percent (to 863 million deutsche marks). The GDR food economy was close to breaking down by September 1990, shortly before the country became part of the united Germany and also of the European Community.

The food economy in the former GDR would have broken down had it not been for the very substantial financial and other aid from the FRG and by then also from the EC. Even so, agriculture in eastern Germany and its upstream and downstream links suffered many hardships of adaptation to the new price levels and marketing conditions, including the possibility of bankruptcy of farms. Unemployment became an ominous and increasingly real threat in the whole economy. In agriculture, half of the labor force (in some districts more) will have to be released in the foreseeable future.

In the spring of 1990, indications were that between 10 and 15 percent of GDR agricultural land would have to be idled.¹⁷ After unification and joining the EC, special payments for land taken out of production have been arranged. By early 1991, farms applying for such payments represented a total of 13 percent of all arable land.

In 1990 the highest-ever grain harvest was brought in, almost 6 percent above the 1986–89 annual average, and other crops also had excellent yields. At the same time, livestock herds (although not meat output) began to decrease, and mixed feed production declined by a full 40 percent; in spite of EC intervention purchases, two million metric tons of grain were left on farms by the end of the year. Under EC regulations, the milk production quota was reduced to 80 percent of the 1989 output, and a preferential beet sugar quota (which exceeded the 1989 output by 20 percent) was granted.

Highly subsidized and credit sales to East European countries, including the Soviet Union, helped to dispose of part of the meat and milk surpluses, but there remained an over-supply of food, so that farms in practice received prices even below the EC intervention level. Despite compensatory financial aid, many farms were illiquid or went bankrupt under the price collapse and sales bottleneck of late summer 1990. Only in September 1990 did sales begin to stabilize, but most farm gate prices remained below the FRG levels, usually by between 5 and 10 percent. Production costs are still too high because of overconsumption of feed, expensive fixed assets, and an overabundant labor force that is paid low wages.

¹⁷ Author's discussions with sources in East Berlin.

By July 1, 1990, consumer food prices had risen steeply, although most of them, with the exception of milk products and poultry, were by the spring of 1991 still between 5 and 25 percent below the FRG level. The margin between farm gate and consumer prices widened, largely because of the high processing costs in an outdated and neglected industry (dairy farming was a glaring example), and because industrial and trade managers had yet to adapt to a liberalized market. Gradually, FRG firms have bought old plants and distribution networks, or formed joint ventures, so that modernization has begun. The same holds true for agricultural inputs and supplies. Many former inter-farm enterprises in the GDR are developing into independent joint-stock companies.

The combination of falling farm gate prices, difficulties of selling in an oversupplied market under Western competition, wage claims under the impact of higher consumer prices, and aspirations for a Western standard of living made things extremely difficult for GDR farms.

Aid (mostly from the FRG) has been and still is being extended to former collectives as well as to the new private farms. It is estimated that during 1990 the total amounted to nearly 4,000 deutsche marks per farm worker, four times the monthly wage of a state farm worker in 1989 (in GDR marks). The aid program for collective farms was phased out at the end of 1990, but had to be renewed in a changed form for 1991.

CHANGING STRUCTURES: STATE, COLLECTIVE, AND PRIVATE FARMS

State farms have had little room to change production schedules or to plan new investment. They belong to the Trust Agency for Agriculture and Forestry and will either be put under state (Länder) or municipal jurisdiction or sold (on a minor scale only) to private investors. However, state farms account for only 8 percent of total agricultural land and most of them are located on former large estates expropriated under pre-1949 land reform, and cannot be claimed by former owners.

Of the collective farms, a number work quite well, but the majority have severe problems of internal structure and marketing. German experts predict that less than 30 percent of the collective farms have a real chance of surviving as independent large-scale farms. Many recommend recombination of crop and animal production in much smaller units of between 200 and 500 hectares or so. Unfortunately, FRG rules for investment subsidies give preference to smaller farms.

The formation of such new farms also presents legal problems. As long as the adaptation law of July 1990 was effective (an amendment was under deliberation in the federal parliament in early summer 1991), a collective farm was allowed to change directly only into a regulated cooperative. For this, the agreement of the majority of the particular collective's members (among them those who hold land titles) was required. Otherwise the collective farm was to be formally liquidated before business under any other form of corporation could be started. With liquidation, however, the members and co-owners were to be paid out, and there were no rules for evaluating the assets. Furthermore, liquidation would make obvious the fact that many farms have very little asset value for distribution (some even have a negative capital balance). In some cases, land represents the only remaining value.

The GDR law of March 6, 1990 changing the 1982 law on collective farms made it clear that collectivized land has all the time legally remained the property of the collective members.

After the elections of March 1990, the new GDR government declared inviolable the property relations brought about during 1945–49 under Soviet military administration, that is, before GDR statehood and collectivization.

There seems to be a common opinion that those who have a property title but do not want to resume farming should be paid land rent or given some other compensation. Most collective farms will not be able to pay land rent in the foreseeable future. Not many people, whether present farm workers or former peasants (including those who have long become nonagricultural workers), are willing and able to start individual family farming and to compete in a free, (although EC-protected) market. Much of the now noncollective land is leased to FRG farmers.

By March 1991, between 5 and 7 percent of the farmland in eastern Germany was in family farms. A smaller percentage may be expected to join within coming years when land property or comparable ownership titles will be fully clarified. In the northern districts in particular, where large estates with hired farm labor predominated before 1946, there is little tradition of independent family farming.

CHANGES IN POLITICAL LIFE IN THE COUNTRYSIDE

In the Soviet-type organization of rural life, the public farm (or union, association, etc., of farms) exerts strong influence beyond the role of agricultural production. Rural small industries or services, for example food processing, repair shops, and auxiliary production for industry, are often part of the "farm" enterprise: excluding rural-urban commuters, the farm is almost the exclusive employer in a given locality. At the same time, the public farm almost has a monopoly on material resources, so that the local public administration—although elected by the local population and juridically independent—is very dependent on the large-scale farm for material and financial resources or for hired labor in social, cultural, and other communal work.

On the other hand, the Soviet-type public farm, by virtue of the centralized system of economic directives, is strictly subordinated to higher economic and administrative echelons. The central power not only directly exerts its will on the local level, but also influences local life through the farm.

Although in the course of the political, economic, and administrative reforms the chain of command from the center to the farm has loosened, the local power of the latter in the rural community is unlikely to increase. This is so not only because of the farms' precarious financial situation but also because under reform some not strictly agricultural activities are being organized outside the farm, and resources are being invested in potential employers or small entrepreneurs independent of the farm. The reforms may create favorable conditions for some independence of local public administration and for pluralistic economic and social life. Where a significant number of private, economically independent farms come into existence, such a development may be enhanced.

"Peasant parties" have formally existed all the time in Bulgaria, Czechoslovakia, and the GDR, as have nonparty associations of farmers. Some of the parties and associations may become more vigorous; several have already started to form coalitions. In Czechoslovakia, four

rural/peasant and later six parties came into existence, in March 1990¹⁸ and after, among them the Czechoslovak Agricultural Party and the Free (i.e., private) Farmers' party.

Whether the parties and associations that already existed under communist regimes have been able to transform themselves from satellites of the Communist Party into genuine representatives of agricultural and peasant interests (nationally and locally) is questionable. The official peasant party that has existed in Bulgaria since 1950 won few votes during the June 1990 elections, although it had declared its independence from the Communist (now Socialist) Party in February 1990. Whether its oppositionist counterpart, the revived Agrarian Union "N. Petkov" (named after its former leader, who was executed in 1947) was more successful in the elections is not clear, as it ran within a coalition and not on its own. The former satellite peasant party in the GDR had respectable results in the national and particularly in the local elections in March and June 1990. An association of collective farms was formed in April 1990 in Bulgaria. In May 1990 a union of private peasants (which acts mainly on a regional basis) was formed.

INTERNATIONAL AGRICULTURAL TRADE AND ASSISTANCE

The familiar CMEA regime of foreign trade had ended by 1991. Beginning that year, all trade among member countries proceeded on a convertible currency basis or by barter accounting on the basis of world market prices (see Inotai, this volume). For the former GDR, the currency problem is no longer relevant, and the country's agrarian protection system has become identical to that of the EC. GDR food exports are supported by subsidies, some of which temporarily exceed those generally granted by the EC. Imports of food are paid in convertible currency and therefore can come from whatever supplier has the best offer under the EC levies.

In Czechoslovakia, convertibility of the koruna for the domestic market (envisaged for 1991), and for international transactions in the long term, may make world market food prices relevant in assessing the comparative advantages or disadvantages of the existing policy of self-sufficiency. On the whole, the policy of food autarchy is likely to be continued for socio-political and balance of payments reasons despite possible comparative cost disadvantages. This implies a protectionist agrarian policy and little involvement in international food trade even after full convertibility of the koruna.

Bulgaria's foreign agricultural trade is in an emergency. The country traditionally has had an export surplus, due mainly to tobacco, sheep, and fruit, and the government will probably try to restore it. In view of the domestic situation and the need to earn convertible currency (or else to save it), domestic prices will probably be kept above world market prices, and agricultural exports will probably continue to be subsidized. For quite some time Bulgaria will have to continue importing on a barter, clearing, or food aid basis.

Particularly in the case of Bulgaria, the most effective and direct way for the international community to facilitate agricultural reform and at the same time to provide incentives for increased and improved production is to enable the country to sell some of its agricultural products in hard currency markets. This is difficult to put into practice because of the

¹⁸ On the proposals to reform the Association of Collective Peasants into an Association of Agricultural Cooperatives, and its election alliance with the four peasant parties in Czechoslovakia, see Böhme 1990.

protectionist policy of practically all food-importing countries with a convertible currency. At the present stage flexibility is needed more than capital to forge a chain linking primary production, processing and packaging, and the markets abroad.

For Czechoslovakia, agricultural exports are not of major importance¹⁹, but reducing costs and losses certainly is. As for direct financial help, the Czechoslovak minister of finance Vaclav Klaus has argued that an IMF stand-by credit or assistance fund for overcoming the initial difficulties of the reform process would be desirable, but that in the longer run outright gifts are not the means to create an efficient market economy.

REFERENCES

- Agrarinformationsdienst Osteuropa*. 1991. No. 2 (August), pp. 5–6.
- Alton, Thad P., et al. Annual Volumes. *Agricultural Output, Expenses, and Depreciation, Gross Product, and Net Product in Eastern Europe*. Research Project on National Income in East Central Europe. New York: L.W. International Financial Research, Inc.
- Brezinski, Horst. 1990. "Private Agriculture in the GDR." *Soviet Studies* 43(3), pp. 535–54.
- Böhme, Anke. 1990. "Die Schrittweise Erneuerung des Verbandes der Genossenschaftsbauern in der CSSR." *Informationen-Studien zur Ausländischen Landwirtschaft*, no. 7 (March 9). Akademie der Landwirtschaftswissenschaften der Deutschen Demokratischen Republik.
- Cochrane, N. 1991. "Progress Towards Economic Reform in Bulgaria 1991." *CPE Agricultural Report* 4(2), pp. 23–26.
- Davidova, S. M. 1990. "Agrarpolitik in Bulgarien." *Osteuropa* (new series) 40(11), pp. 1097–1104.
- _____. 1991a. "Bulgarian Agriculture at the end of the 1980s". Paper presented at the conference "Agrarwirtschaft Südosteuropas im Wandel" of the Südosteuropa-Gesellschaft, March 23–25, Munich.
- _____. 1991b. "Bulgarian Farm Structure from Paralysis to Reform." *Food Policy* 16(3), pp. 196–205.
- Durzhaven vestnik*. 1991. No. 28.
- _____. 1991. No 17.

¹⁹ In 1991, a significant decline in the population's real income resulted in a sharp decrease in food demand; this led to substantial exports of "surplus" food, mainly grain and meat. This should be a temporary phenomenon.

- ECE/FAO. 1988. *Prices of Agricultural Products and Selected Inputs in Europe and North America 1986/87*. New York.
- FAO. Annual Volumes. *Production Yearbook*. Rome.
- Grosser, I. 1988. *Private Landwirtschaft in Bulgarien*. Berlin: Giessner Abhandlungen zur Agrar- und Wirtschaftsforschung des europäischen Ostens, Bd. 154.
- _____. 1985. "Federal Republic and Democratic Republic of Germany (Lower Saxony and Northern GDR)." In Karl-Eugen Wädekin, ed., *Agriculture in Inter-system Comparison: Communist and Non-Communist Cases*. Berlin: Giessener Abhandlungen zur Agrar- und Wirtschaftsforschung des europäischen Ostens, Bd. 113.
- Hohmann, Karl. 1988. "Energy Consumption in GDR's Agriculture." In J. C. Brada and K.-E. Wädekin, eds., *Socialist Agriculture in Transition*. Boulder, Colo.: Westview Press.
- Hospodarske noviny*. 1990. "Statistical Report for 1989" No. 10. (supplement).
- Hudeckova, Helena, and Michal Lostak. 1991. "Privatization in Agriculture in the Results of a Sociological Empirical Research Survey of 1990." The Agricultural Research University of Prague, Department of Rural Sociology. February. Hectograph.
- Individual'naya trudovaya deyatel'nost' v sotsialisticheskikh stranakh*. 1990. Moscow.
- JEC. 1989. *Pressures for Reform in the East European Economies*. 2 vols. Joint Economic Committee, Congress of the United States. Washington, D.C.: Government Printing Office.
- Lukas, Z. 1986. *Privatsektor in der tschechoslowakischen Landwirtschaft seit 1970*. Forschungsbericht Nr. 101. Mimeograph. Vienna: Wiener Institut für Internationale Wirtschaftsvergleiche.
- Pehe, Jiri. 1990. "A Record of Catastrophic Environmental Damage". *Report on Eastern Europe* 1(12), pp. 4-7. Washington, D.C.: Radio Free Europe.
- Schimmerling, H. 1991 "Agricultural Development in Czechoslovakia: Prospects after the 1989 Revolution." *Food Policy* 16(3), pp. 187-95.
- Schinke, Eberhard. 1990. "New Forms of organization in the GDR as compared to the USSR and East European States". In Karl-Eugen Wädekin, ed., *Communist Agriculture: Farming in the Soviet Union and Eastern Europe*. London and New York: Routledge.
- Shmelev, Geli. 1990. "Fakty--upriamaia veshch'." *Izvestiia*, January 10.

Slepicka, Alois. 1988a. *Agricultural Enterprises as Spearheads of Rural Industrialization in Czechoslovakia*. Studies in International Economics and Geography, Rural Transformation in Eastern Europe, no. 2. Stockholm: The Economic Research Institute, Stockholm School of Economics.

_____. 1988b. *Recreation and Leisure Activities in Rural Czechoslovakia*. Studies in International Economics and Geography, Rural Transformation in Eastern Europe, no. 3. Stockholm: The Economic Research Institute, Stockholm School of Economics.

St'astny, Z. 1991. "Der Wandel der Produktionsstrukturen der slowakischen Landwirtschaft und seine sozialen Folgen." Paper presented at the conference "Agrarwirtschaft Südosteuropas im Wandel" of the Südosteuropa-Gesellschaft, March 23–25, Munich.

Statisticheskii ezhegodnik stran-chlenov SEV. Annual volumes. Moscow: Finansy i statistika.

Statisticka rocenka Ceskoslovenske Socialisticke Republiky 1989. 1989. Prague: STNL-Nakladatelstvi technicke literatury.

Statistisches Jahrbuch der Deutschen Demokratischen Republik 1989. 1989. Berlin: Staatsverlag der Deutschen Demokratischen Republik.

Stern, Klaus. 1990. *Wirkung der großflächigen Landbewirtschaftung in der DDR auf Flora, Fauna und Boden*. Berlin: Geissener Abhandlungen zur Agrar- und Wirtschaftsforschung des europäischen Ostens, Bd. 174.

Wädekin, Karl-Eugen. 1990. "Private Agriculture in Socialist Countries: Implications for the USSR." In Kenneth Gray, ed., *Soviet Agriculture: Comparative Aspects*. Ames, IO: Iowa State University Press.

ZMP. 1990. *Agrärmarkte in Zahlen Ost*. Bonn: Zentrale Markt- und Preisberichtsstelle.

THE USSR

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Editors' Note: This chapter reflects the chronic problems of Soviet agriculture prior to the open crisis of autumn 1991, the dissolution of the USSR, and initiation of reform in Russia. It provides an assessment of the legacy of socialist agriculture in the USSR, and suggests the magnitude and general direction of change needed throughout the successor states. A review of agriculture in these states as of late 1991 or early 1992 can be found in *Food and Agriculture Policy Reforms in the Former USSR: An Agenda for the Transition* (World Bank 1992).

Food and agriculture are among the most serious problems of the Soviet economy and society. According to household budget studies, food absorbed approximately 40 percent of consumer expenditures in 1989 (*Narodnoe khoziaistvo SSSR v 1989*). Food shortages are symptomatic of growing disequilibrium and inflation. This paper addresses the worsening Soviet food problem, emphasizing the supply side. The chapter examines the nature of the problem, the current deterioration, steps already taken to initiate the transition to the market, and options for the future.

DEVELOPMENT STRATEGY SINCE 1965

The Soviet Union has a rich agricultural resource base, both natural and human. The current problems result from a flawed development strategy that neither uses these resources well nor protects them for future use.

Since 1965, the Soviet agricultural development program has been dominated by huge investments in primary production, in particular in mechanization, land reclamation and irrigation, and in supply of chemical fertilizers. This program followed a long period of underinvestment in agriculture that resulted in a relatively low technical performance. To remedy the previous underinvestment and weak technological base, during much of the period after 1965 agriculture claimed 27 percent of the total capital investment in the national economy. Industries supplying agricultural inputs also expanded. The USSR now produces 40 percent of the world's output of tractors, over half of the grain harvesters, and it leads other countries in the production of mineral fertilizers (*Narodnoe khoziaistvo SSSR v 1988*).

This massive investment has contributed to growth; agricultural output measured in constant prices increased by 43 percent between 1966 and 1989. The growth in output, however, has not kept pace with growth in inputs, and efficiency has declined. The increase in inputs has raised costs and also helped to degrade the quality of agricultural land. The

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investment in agricultural production and in the agricultural input supply industry has had a poor return, yet the enterprises and industries involved retain a high degree of influence.

The disposition of agricultural output received considerably less attention in the post-1965 development program than did primary production. Investment in storage, transport, and processing has been low, and much of the technology is obsolete. As a result, Soviet output of farm machinery quantitatively exceeds that of the United States, but the USSR lags woefully in storage capacity and processing. Commercial refrigeration capacity in the USSR is one-tenth that of the United States.

Underinvestment in food distribution, including storage, transport, processing, and marketing, contributes to massive loss of output, beginning on the farm and continuing to the consumer. Losses are roughly 30 percent of total farm output. Losses of grain, at 30 million tons, and of meat, at about 1 million tons, are a large portion of imports of these items. Losses of perishables such as fruits, vegetables, and potatoes are also high. Sugar imports are necessary in large part because of inadequate domestic sugarbeet processing. The food processing industry, in addition to its obvious technological problems, is highly monopolistic; incentives to improve performance are weak.

Emphasis on mechanization, land reclamation, and chemicals has thwarted investment in rural infrastructure as well as in distribution. Consequently, rural areas are dominated by state and collective farms poorly linked by roads and telecommunications to both other farms and other enterprises and sectors. Rural people do not have access to the same services and amenities that are available to many urban residents. The farms themselves are constrained by property relations and managerial systems that reduce efficiency, and are subject to political interference in managerial decisions. The traditional peasant mentality has been replaced by that of the hired worker. In many instances state and collective farms have demonstrated a poor ability to adopt scientific and technological innovations, and to protect the natural resources under their stewardship. Radical changes are urgently required in property relations, farm organization, and management.

The inability of the post-1965 agricultural development program to meet rising demand has resulted in large and growing imports of food (table 14-1). In recent years food imports have cost approximately \$20 billion.¹ Because the USSR is such a large agricultural producer, even very large imports of grain and meat are a relatively small share of domestic production. For example, grain imports of 35 million tons are 18 percent of a domestic crop of about 200 million tons. For some products, however, imports represent a large proportion of domestic consumption. Imports of edible oil constitute 30 percent of consumption. About 52 percent of sugar consumed is imported, and 20 percent of butter (*O merakh...*1990).

Energy exports pay for the huge food imports. The food shortages thus increase the export of nonrenewable resources, and divert export earnings away from technological modernization in the many sectors in which it is needed.

¹ Unless stated otherwise, all dollar amounts are current U.S. dollars. A billion is 1,000 million.

THE DETERIORATING CURRENT SITUATION

Recent changes in the traditional command economy have exacerbated the chronic problems of food supply and demand. Many enterprises have been partially released from the direct price control of the past, and prices in both monetary and barter exchanges have risen. The easing of price controls has taken place without strict wage discipline, and many workers have demanded and been granted wage increases that exceed productivity growth. In 1989, for example, wages grew at 14–15 percent, when economic growth was 2 percent in aggregate (one percent in the agricultural sector) (*O merakh...*1990). Wage growth continued in 1990, when aggregate economic growth was negative.

Poor control of monetary growth as a direct result of regulatory changes in the past two years has stimulated demand for food. Supply has not increased commensurately. Despite a good grain crop in 1990, aggregate food production in constant prices was 2.3 percent below 1989. The aggregate decline was due in large part to a 3 percent fall in meat production. Production of fish and margarine each declined by 7 percent. Sugar output fell by 9 percent. Production of butter and milk was unchanged, but cheese output fell by 2 percent.

These changes in the output of processed products mirrored production declines in primary agricultural output (except grain). The decreased production in 1990 and reduced deliveries into state trade are creating shortages of inputs of agricultural origin in 1991, and the decline in production continues.²

The falling output and increasing disorder in domestic trade has interrupted traditional links between enterprises, regions, and republics. The uncertainty of trade has encouraged policies of regional self-sufficiency, particularly of food. Declining use of comparative advantage contributes to efficiency loss.

The deterioration can be seen in several indicators. One, of critical importance, is the growing budget deficit. Direct food subsidies to cover the difference between expenses the state incurs to purchase, process, and deliver food, and earnings recovered in sales to consumers were expected to amount to 95 billion rubles in 1990 (approximately 10 percent of GNP). They are instead estimated to have cost 146.4 billion rubles (closer to 15 percent of GNP), because producer prices were raised at midyear. In April 1991, consumer prices were raised, but the impact on the budget is likely to be modest at best, since the price increases and direct compensation may cancel each other. In the meantime, costs of production at the farm level continue to rise, making further increases in purchase prices likely.

Another indicator of worsening disequilibrium is the growing gap between prices in state trade and prices on the less controlled collective farm markets. The collective farm markets carry a small volume of trade in most commodities, and their prices are not representative of the average prices that most consumers pay. Many people use them for a portion of food expenditures, however, and prices in these markets are less controlled than in alternative outlets. The average price of a kilo of meat in collective farm markets nationwide in 1990 was about 10

² *Editors' Note:* In mid-July, 1991, production of meat, butter, and cheese during the first half of 1991 was reported to lag that of the same period in the prior year by 13 percent. The 1991 grain harvest was forecast at that date to be 185–195 million tons, compared to 218 million tons (bunker weight) the prior year. (*Sel'skaia zhizn'*, July 12, 1991).

Table 14-1. USSR Foreign Trade of Main Types of Farm Produce, Selected Years
(millions of tons)

Product	1960	1965	1970	1975	1980	1985	1988	1989
<i>Imports</i>								
Cereals and pulse crops	0.2	6.4	2.2	15.9	29.4	45.7	35.1	38.1
Wheat	0.1	6.4	1.8	9.2	14.7	21.4	21.2	14.2
Corn	0.1	—	0.3	5.5	9.9	18.6	11.4	19.0
Meat and meat products ^a	67.0	252.0	165.0	515.0	821.0	857.0	719.0	696.0
Animal butter ^a	4.0	5.8	2.2	11.6	249.0	276.0	440.0	247.0
Sugar	1.6	2.1	2.7	3.0	4.6	4.1	3.9	4.5
<i>Exports</i>								
Cereals and pulse crops	6.8	4.3	5.7	3.6	1.7	1.8	1.8	1.3
Wheat	5.6	1.7	4.7	2.7	1.5	1.3	1.4	1.0
Corn	0.1	0.6	0.3	0.1	0.1	0.3	0.4	0.2
Meat and meat products ^a	—	31.0	55.0	44.0	35.0	27.0	30.0	26.0
Animal butter ^a	32.1	43.0	73.0	20.0	18.5	17.4	12.9	14.4
Sugar ^a	243.0	604.0	1,393.0	53.0	152.0	164.0	213.0	171.0

— Not available.

a. thousands of tons

Source: Vneshne ekonomicheskie svyazi SSSR v 1988; GOSKOMSTAT current statistical data.

rubles, compared to 2.27 in state trade. By March 1991, prices in collective farm markets had risen to approximately 25 rubles per kilo, compared with 4 rubles per kilo in state stores. *Kommersant*, April 2, 1991). The average monthly salary was thus worth about fourteen kilos of meat at free market prices.

POLICIES OF THE EARLY AGRICULTURAL TRANSITION

The steady deterioration in the food economy has not gone unnoticed. Despite its very serious implications, no clear political consensus on solutions has emerged. There are three general approaches, each advocated by a substantial constituency, and they imply quite different policies and investment strategies.

Advocates of one approach hold the view that the institutional structure is fundamentally sound, but that farms lack sufficient quantities of inputs, workers lack discipline, and both workers and managers lack incentives. More radically minded people argue that the institutional structure is fundamentally flawed, and that land and assets of most state and collective farms should be transferred to individuals to encourage the full and rapid development of a free market economy.

An alternative approach embodied in official policy falls between the two more extreme views, and can be called pragmatic. Official policy, however, has recently emphasized promotion of market-oriented agriculture, together with administrative regulation of the market. Official policy retains very ambitious targets for increased production by 1995, implying annual growth in production of between 5 and 6 percent. Although investment in aggregate is scheduled to decline, planned investment in the agroindustrial complex will increase over the next six years. The proportion of increasingly scarce funds allocated to agriculture is thus scheduled to rise, and the return on these investments will be even more important than in the past.

Improvement in food processing is to come from an ambitious program of conversion of military plants in the atomic, aircraft, shipbuilding, and other sectors to production of equipment for agroindustry. At the Party plenum in March 1989, 77 billion rubles were approved for investment in food processing between 1989 and 1995. The decision to rebuild the food industry raises a number of difficult economic questions. In which sectors, in which locations, and with which technologies should new processing capacity be created? The current trend favors small plants located close to sources of raw materials, rather than the traditional large plants located near consumers. Large scale reinvestment in food processing and distribution requires rigorous feasibility studies incorporating criteria appropriate for a market economy. Moreover, the conversion of military plants to production of food-processing equipment is a complex issue itself, involving introduction of new technologies and incentives. Foreign partners can make an important contribution in this area.

Reorganization of the system of transportation and marketing will be a very complex, time-consuming, and expensive task. Food marketing is at present so underdeveloped that growth of employment in this sector could be substantial. Generally, change in the agricultural complex with a particular emphasis on food processing and marketing is one of the major elements of the plan of food supply improvement.

The current agrarian policy is based on resolutions of the March 1989 plenum of the Central Committee of the Communist Party, and a number of related decrees of the Supreme Soviet, the Council of Ministers, and the President. One of the most important components of the current policy framework is legislation on land ownership, both at the union and the republic level.

The union-level land law was adopted in March 1990. According to the law, land belongs to the people inhabiting an area.³ Local authorities have jurisdiction over the disposition of land, and may convey it under individual, collective, and state possession. In addition, the law provides conditions for the transfer of possession and protection of rights. Individuals can possess agricultural land for life, and can bequeath it to their heirs. Collective and state farms, associations, and other enterprises, including religious organizations, can possess land permanently if it is used for farming and forestry or both. Joint ventures and associations involving foreigners can hold permanent or temporary possession of agricultural land, depending on the circumstances.

The land law pertains to leasing of land, as well as ownership. Local authorities, as stewards of land, are empowered to lease it directly to individuals, collectives, state enterprises, cooperative enterprises, international organizations, and joint ventures. Enterprises are also empowered to lease out land in their possession.

The law sanctions two kinds of payments for land use. The possessor of land owes taxes to the local budget, with the exception of some land allotted for scientific or cultural use. Lessees pay a fee negotiated within the terms of the lease. In the absence of a land market, the valuation of land for purposes of taxation and leasing is a difficult question. According to the methodology currently used, all land is ranked according to its natural productivity and bioclimatic potential. Land of average quality is given a rank of 100 per hectare; each point of rank is valued at 18 rubles. All other land is ranked on the 100 point scale relative to average land, and valued at 18 rubles per point. This methodology is intended to provide a value for land as a capital asset.

A related set of calculations measures the annual return on land in agricultural use. Average quality land is estimated to yield an annual return of 180 rubles per hectare in excess of the return on marginal land. The highest quality land under this methodology yields a return of 300–400 rubles per hectare in excess of the return on marginal land. These calculations serve as the basis for setting land taxes and leasehold fees.

The land law provides the legal foundation for peasant farms, as distinct from collective or state farms. Individuals and households may own dwellings, farm buildings, livestock, machines and tools, and other assets for agricultural production, processing, and marketing. The household holds land either in lifetime possession, or on leasehold. The individual or household has full ownership of agricultural output.

The law protects the rights of landowners and users. It also stipulates that possession is contingent on efficient use for proper purpose. Local authorities can rescind use and possession rights to land that is, in their judgment, managed inefficiently or used improperly. Disputes will be settled by the courts.

³ *Editors' Note:* The language in the law is ambiguous, and does not specify what organizational unit represents "the people." The phrasing of this paragraph is faithful to the ambiguity of the law.

Land cannot be bought or sold, but right of possession can be inherited. The maximum size of allotment granted in use is set by local authorities and should correspond to the area that can be worked by family members. This should in general be a contiguous unit, not separate parcels, and should have a water source. When land is transferred through inheritance, the allotment cannot be divided.

The union-level land law provides a general framework, but a number of republics have passed their own land laws. Seven republics have legalized private ownership of land, with more rights included in ownership. In the Russian Republic privately owned land can be bought and sold after ten years of use by the owner. The tendency at the republic level is toward adoption of laws with fewer restrictions on private ownership of land. These laws will bring fundamental change to the countryside. They will probably bring increased inequality in rural incomes, and perhaps increased unemployment. Bankrupt state and collective farms will be transferred to private producers, or to industrial enterprises as private subsidiaries. As more households enter private farming, state and collective farms can be converted to service cooperatives to serve the private sector.

Official policy now promotes diversity in farm ownership and management. Collective farms, state farms, cooperatives, peasant farms, family farms, subsidiary farm units, and subsidiary rural industries are all to have equal legal status, and operate under the same economic conditions. Each is to be responsible for its own profits and losses. Although each of the organizational forms is to have equal status, in practice the most widely used feature of the structure is the expansion of lease contracting.

Land farmed on leasehold is in general leased from a state or collective farm. Some collective farms have leased out all their land, and reorganized themselves as cooperatives of tenant farmers. In the future, more leaseholders will lease directly from local governments. Most leaseholders are still linked to collective or state farms through marketing agreements for a large proportion of their output. They may sell the remainder to the consumer cooperative or through private channels.

According to official statistics, 21 percent of state and collective farms now have some form of lease contracting. More than 330,000 agricultural workers engage in contract operations. Most of these contracts replicate much of the traditional relationship between laborers and managers of collective and state farms, but they also constitute an early step toward new forms of management. The next step is individual farming. By mid-1991, 43,000 individual farm units were reported nationwide, including 23,000 in the Russian Republic.⁴

The further development of these new farm units will depend on the legal environment and progress in providing infrastructure to serve them. Individual producers and leaseholders in a number of republics have recently formed unions to protect their interests and press for changes in the legal and economic environment.

Even though the number of private farm units is increasing, collective and state farms still exist and will continue to be important organizations in the future. A particularly important

⁴ *Editors' Note:* This implies approximately one private farm of about 5 hectares or family leasehold per collective or state farm of 2,000 to 3,000 hectares. The average size of a private farm, is, however, 10 hectares. Thus the land and labor resources engaged even in this quasi-private activity are still quite modest relative to the size of the agricultural sector.

role will be played by economically successful collectives and state farms. Most farms earning losses are in mountainous, semi-desert areas, or places where the soil and agroclimatic conditions are marginal. Low-earning farms, on the other hand, appear in areas that are not obviously marginal in terms of physical resources, and these farms, with better management, might be productive units. These two categories of farms hold much of the agricultural debt, and reorganization of state and collective farms through privatization or other means is likely to require massive debt cancellation.⁵ According to current estimates, between 25 billion and 30 billion rubles of agricultural debt from farms undergoing reorganization will be transferred to the budget as uncollectible. This is a large addition to a budget already in deficit. According to a law recently passed, all agricultural debt will be forgiven, regardless of the financial condition of the farm.

The effectiveness of debt cancellation and farm restructuring depends in part on related changes made in the sectors that supply agriculture with inputs. The farm machinery, chemical, and other industries are undergoing changes through which centrally administered distribution is replaced by wholesale trade. Agricultural inputs are supplied from depots and stores owned by state organizations and private companies (partly through commodity exchanges), and the prices of these inputs continue to rise. With the higher prices and stricter cost accounting on farms, demand for traditional purchased inputs has fallen. Demand for small-scale machinery is rising, as is demand for protein-rich mixed feed; the inefficient and poorly balanced grain-based rations of the past are now more expensive.

As the distribution system deteriorates,⁶ the state's ability to direct food and fiber into traditional channels of trade diminishes. In order to maintain procurement in state channels at what is considered a minimally necessary level, a food tax in kind is now being considered. Farms would be required to sell specified quantities of particular commodities to the government at state procurement prices, and could market the residual freely. The government's position has been that the tax should cover minimum normal government procurement of recent years. The Peasant Union, representing primarily state and collective farm management and employees who choose to stay in the collectivized sector, argues that the tax should cover 60 percent of usual government procurement (*Kommersant*, June 19, 1990).

New efforts to keep commodities flowing through traditional channels of state procurement run counter to increasing pressures for regional and local self-sufficiency. Increased local self-sufficiency is in part necessitated by the central government's reduced ability to guarantee supply. New theoretical analysis elevates local and regional self-sufficiency into a positive program based on regional balancing of economic accounts. This increased emphasis on regional self-sufficiency contributes to continued fragmentation of the united market and loss

⁵ In December 1989, a program of debt cancellation was announced under which farms that offered land and assets on leasehold or in other innovative contractual relations could cancel debt in the same proportion. At the time the program was expected to cover 73 billion rubles, or one half of outstanding agricultural debt. Since the adoption of leaseholding has been rather modest, the debt forgiveness to date is probably less than the total amount expected.

⁶ Collective and state farms are increasingly inclined to sell or exchange their commodities for industrial goods rather than cash.

of interregional comparative advantage. It is thus antithetical to full development of market relations.

Reform of the price mechanism is an essential precondition for growth of the market. This will necessarily mean a difficult and painful increase in retail food prices. Changes in pricing began in 1990 and continued in 1991. The first substantial changes took place in May, 1990, when procurement prices for grains were increased on average between 200 and 250 percent. Procurement prices for other products were raised between 50 and 150 percent on October 1, 1990. The procurement price increases of 1990 followed increases in 1982, 1987, and 1988, each of which was implemented to support farm incomes under pressure from rising costs of production.

Retail food prices remained controlled despite the increase in farm level procurement prices. The difference is covered by a growing subsidy, which with the 1990 price increases, is estimated to have reached 150 billion rubles (out of total budgetary expenditures of 500 billion rubles). The growth of the subsidy in the last few years, from 58 billion rubles in 1987 to an estimated 150 billion in 1990, is remarkable.

Most of the subsidy goes to consumers of meat and dairy products, but few foods that move through state retail channels receive no subsidy at all. Consumers who buy most of their food through state stores are the most heavily subsidized, and these are in general residents of the largest cities. People in rural areas buy food through the consumer cooperatives or in private markets, where subsidies are lower and prices higher. Household budget studies show that, for most products, members of collective farms pay prices significantly higher than prices that state employees pay. The gap has grown with the increasing divergence between prices in state trade and other channels.

A number of efforts are in place to constrain the growth of subsidies. Central control over retail prices for potatoes, fruits, and vegetables has been relaxed over the past two years, and the commitment to subsidize these foods has accordingly been reduced. Farms contract directly with trading organizations and negotiate prices, which the trading organizations then pass on to consumers. Municipal authorities have reacted to the relaxation of central price control by setting retail ceilings on these commodities, and these ceilings affect the prices that farms can negotiate.

Another approach to containment of growth in the subsidy is to increase the volume of meat sold through outlets of the consumer cooperative, Tsentrosoyuz. Prices in this channel are approximately twice the level of official state prices, and the amount of subsidy per unit is less.⁷

These efforts were not adequate to stop the continued deterioration of trade and growth of the subsidy, and on April 2, 1991 the first significant increase in controlled official prices for

⁷ *Editors' Note:* Independent cooperatives not affiliated with Tsentrosoyuz were prohibited from engaging in trade in food in 1990, in order to prevent earnings from arbitrage between different channels. The independent cooperatives resemble private sector firms. The enormous economic rents generated by price control have attracted organized crime to wholesale and retail trade in food, and made it difficult for many people to distinguish between criminal activity and legitimate economic transactions.

food in several decades took effect.⁸ Price increases for most foods were in the range of 200 to 300 percent. The official price of beef, for example, rose from 2 rubles per kilo to 7 rubles per kilo. The prices issued by the central government are ceilings, and local governments may mandate lower prices at their discretion. The new prices pertain only to official state trade channels under central jurisdiction. Cooperative trade and sales on collective farm markets are not covered, nor are sales of meat and dairy products under procurement orders from republic governments. Compensation of approximately 60 rubles per capita per month accompanied the price increase. Increased expenditures on items (in addition to food) covered by the price revision are estimated at 240 billion rubles, and about 85 percent of this amount will be returned as compensation. It is expected that the compensation will cover about 60 percent of the total price increase, including both revised controlled prices, and related increases in uncontrolled prices.

The price increase will have the greatest impact in large cities. These are also the areas most dependent on flows of trade. Since problems of supply and distribution remain acute, residents of large cities will pay higher prices for commodities that are still in uncertain supply. Imports remain important, particularly for supply to large urban areas, but the availability of hard currency is now declining. As part of efforts to stimulate local food supply, urban residents are encouraged to cultivate small garden plots.

The problems of supply, prices, distribution, and imports make radical changes in the whole food economy all the more urgent.

CONCLUSION

Problems of the food economy affect all Soviet citizens, and there is broad agreement that the deterioration must end. The consensus stops at that point, however, and political polarization impedes efforts to diagnose the problem and craft a program of reform. Areas of disagreement encompass the major building blocks of an agenda for reform, including property rights and farm structure, price liberalization, financial reform and investment policy, and the role of government. Inter-ethnic tension and uncertainty about relations between the union and the republics exacerbate problems of the geographically dispersed agricultural sector. Despite a lack of consensus on how to change the inherited agricultural economy, the country cannot afford to keep it unchanged. The international community can make an important contribution by sponsoring a wider exchange of knowledge from which consensus must be sought, and by contributing materially to the cost of the chosen strategy.

REFERENCES

Narodnoe khoziaistvo SSSR. Annual volumes. Moscow.

⁸ The actual retail prices differ by republic, because the prices, like a major share of government subsidies, are set in the republic budgets. The highest level of retail food prices is in the Baltic republics, where subsidies are diminishing. Union subsidies are largely limited to All-Union agencies and services.

"O merakh po ozdorovleniu ekonomiky, etapakh ekonomicheskoi reformy i printsipialnykh podkhodakh k razrabotke trinadtsatogo piatiletnego plana" 1990. *Sbornik materialov*. Moscow.

Selskokhoziastvenny entsiklopedichesky slovar. 1989. Moscow.

Vneshne ekonomicheskie sviazi SSSR v 1988. 1989. Moscow.

Vneshniaia trgovlia SSSR v 1950-80. 1982. Moscow. Moscow: Finansy i statistika.

Vneshniaia trgovlia SSSR 1982. 1982. Moscow: Finansy i statistika.

World Bank. 1992. *Food and Agriculture Policy Reforms in the Former USSR: An Agenda for the Transition*. Washington, D.C.

Part V Relevant Experiences in Other Regions

STRUCTURE AND REFORM OF AGRICULTURE IN ISRAEL

*Yoav Kislev**

Editors' Note: Throughout Central and Eastern Europe and the successor states of the USSR, forms of cooperative agriculture will persist for some time, even with private ownership of land and strengthening of the market economy (see Brooks, this volume). Within the region many agriculturalists expect new producers' cooperatives to be economically viable in a market economy. The Israeli experience is one of the few in which collective agricultural production on a large scale has been attempted in a market economy open to world trade. As Yoav Kislev argues, the experience has not been wholly negative, but neither does it support the view that agricultural producers' cooperatives can be strong, durable, and competitive forms of organization in a market economy.

Israel's agriculture has been subjected to excessive cooperation and common action, mostly due to government policy. Forty years ago the government made membership in cooperatives the only option available to new settlers, and it failed to create the conditions for individual action when circumstances changed. The government encouraged cooperatives to overexpand, and it forced common action, through, for example, monopolistic marketing boards.

The record of cooperation in Israeli agriculture is not wholly negative. Cooperation and active governmental policies contributed significantly to the impressive achievement of the sector: the creation of a sophisticated and technically advanced agriculture producing abundant amounts of food and fiber for home and export markets. At the same time, however, cooperation and government intervention propelled agriculture into substantial difficulties during the last several years. Rather than presenting a balanced view of Israeli agriculture, this paper focuses on recent experience and problems.

GROWTH AND INFLATION

Israel is a small country with a population of 4.5 million. Half of the country is desert, and half of the 430,000 hectares of cultivated area is under irrigation. Israel is a middle income country with per capita GNP of \$9,500.¹ Agriculture contributes 3.5 percent of the Net National Product and 10 percent of the country's exports, and employs 5.2 percent of the labor force.

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¹ Unless stated otherwise, all dollar amounts are current U.S. dollars.

After the war of independence of 1948, the newly established state had to struggle for economic survival, and absorb a large number of immigrants who came almost simultaneously with the flight of 600,000 Arab refugees. By the mid-1950s, Israel had embarked on a path of economic growth that continued at record rates for twenty years. Growth slowed significantly after 1974.

The country had two periods of severe inflation. The first was in the early 1950s when a fledgling government strove to finance war and reconstruction with a small tax base and a poor administration. Prices increased 56 percent in 1952. The second wave of inflation started in the mid-1970s and accelerated thereafter. It halted in 1985 after reaching an annual rate of close to 800 percent. Since then, inflation in Israel has been approximately 20 percent per year. The rising prices in the inflationary periods were fueled by an expanding supply of credit, much of it imported.² Market interest rates lagged behind inflation, and real rates of interest were negative for most of the years between 1974 and 1985. These conditions encouraged overinvestment and discouraged saving. Interest rates also lagged when inflation decelerated in 1985; consequently, real rates reached extremely high levels. Agriculture was much affected by these macroeconomic and monetary developments. The sector enjoyed growth and rising incomes when credit was in ample supply, but found itself in a deep crisis when inflation halted.

AGRICULTURE: FOUR DECADES

The 1950s began with food shortages and rationing. The foreign currency constraint eased early in the decade and agricultural expansion, through settlement and increased utilization of factors of production, became possible. The number of moshavim (family-owned farms in cooperatives) and kibbutzim (communes) more than doubled, as did the cultivated area. The total irrigated area quadrupled, and output grew tenfold in the following four decades. Terms of trade and real output prices improved until approximately 1965, but followed a downward trend thereafter (table 15-1).

Exports expanded in magnitude and diversity during the 1970s, and production and marketing became increasingly sophisticated. Investment in the rural sector increased substantially toward the end of the 1970s. In the kibbutzim, a great part of the investment was in manufacturing enterprises. This surge paved the way for the later crisis.

The beginning of the 1980s differed little from the preceding decade. Gradually, however, the agricultural sector stagnated; productivity did not rise with investment, and agriculture, particularly its cooperative sector, accumulated a debt burden it was later unable to service. The crisis erupted in July 1985 when, as part of anti-inflationary policy, credit was severely squeezed and rates of interest sky-rocketed.

The debt burden continues to create uncertainty about the sector's prospects. Agriculture may emerge in a few years reformed, stronger, and healthier, but the pill may also be too hard to swallow.

² This was partly recycled oil money which was made available on convenient terms to Israeli banks.

Table 15-1. Israeli Agriculture: Key Data, Selected Years 1955–88

<i>Year</i>	<i>Irrigated Area (thousands of hectares)</i>	<i>Employment (thousands)</i>	<i>Gross Capital Stock Index (1976=100)</i>	<i>Net Domestic Product Index (1975=100)</i>	<i>Terms of Trade^a (1976=100)</i>	<i>Real Output Price Index^b (1976=100)</i>
1955	890	102	35	19	—	—
1965	1,510	114	69	51	119	99
1975	1,800	80	95	95	100	102
1985	2,327	89	112	177	90	85
1988	2,156	80	109	172	95	66

— Not available.

a. Ratio of output to input price index.

b. Output price deflated by the consumer price index.

Source: Israel 1989.

GOVERNMENT INTERVENTION IN AGRICULTURE

Israel is a free market economy mixed with government intervention that is especially intensive in agriculture and in the capital markets. The government's goals in agriculture are to support farm income, to improve food supply, and to maintain the rural population. Throughout the years, Israel's agriculture was built mostly by penniless immigrants ignorant about farming practices; public support for agriculture had many dimensions beyond agricultural production. The government intervenes in planning, the supply of public services, price support, and trade. The government is involved in almost all aspects of farm life, particularly in cooperative agriculture.

Agricultural production policies are chiefly implemented by marketing boards. These are semi-democratic bodies, with nominated members representing growers, traders, and consumers. The boards are responsible for control of production, marketing, exports, and the distribution of subsidies linked to product prices. (Investment capital and water are also subsidized, but not through the marketing boards.)

Planning and subsidizing go hand in hand. Only livestock products are subsidized on a regular basis and livestock production is controlled quite effectively. Efforts to control the production of nonsubsidized vegetables and fruits have mostly failed. The rate of support determines the effectiveness of planning in agriculture. Subsidies have not been stable; product price supports in 1986 were only one-tenth of their 1984 level. Such wide fluctuations may not occur in the near future, especially if inflation is kept at its current levels. In any case, agriculture cannot expect to enjoy the same kind of support it enjoyed in the past. The government budget is now tighter, and a significant part of the funds allocated to agriculture will be used in the future to alleviate the financial burden of the sector. Agriculture will, moreover, not be the critical sector in the absorption of a new generation of immigrants.

The government's intervention was most successful in the livestock industry. Most of the time the goals of ample supply at stable prices and reasonable income to growers were achieved. Planning failed, however, in major policy areas. An optimal water policy was not implemented. Not only did the government not prevent cooperative agriculture from sinking into debt, it contributed directly to the accumulation of excess capacity and thus to the current crisis in Israel's agriculture. The government has dealt ineffectively with marketing boards and agricultural exports, citrus in particular, and rejected innovation. The government was similarly ineffective in dealing with structural problems in the moshavim and prevented long overdue changes from occurring.

These "government failures" are not incidental. They reflect the government's yielding to myopic pressure of farm groups guided by narrow rationality (Zusman and Rausser 1991), arrogant rejection of professional advice, basic mistrust in the market process, favoritism (often motivated by good intentions), and inability to implement necessary but painful changes. The government has modified its ways only when dragged into a deep difficulties, or it has clearly and demonstrably lost the ability to enforce its policy. Water management, the Citrus Marketing Board, and the financial crisis in cooperative agriculture are relevant examples.

WATER

There is no private ownership of water in Israel. Water is a common resource, and belongs by law to the state, which controls its use. The national system of reservoirs and conduits connects all important sources and users in a single network; the system both stores water and moves it from the rainy north to the dry south.

The government allocates pumping quotas and user's rights. Water charges are set by the government in consultation with a parliamentary committee in a process open to political pressures (skillfully applied by the agricultural lobby). Irrigation water is subsidized at two levels; the operating costs of the national water company and of regional suppliers are supported, and the national system is not charged for the capital cost of the main conduits, which are constructed with public funds.

"Water carries the subsidy to the end of the pipeline," is the argument often made in support of water subsidy as a means of promoting farming in remote regions. Water subsidization, however, does more than promote farming. It changes the pattern of agricultural production in Israel. Cotton, the country's most important field crop, would have virtually disappeared if water were charged at cost. Similarly, much of the citrus production would have been eliminated. Subsidization increases the demand for water and the political pressure both to allocate more water and to invest in the development of water supply.

The Water Authority, the agency in charge, is run mostly with farmers' interests in mind, and it often yields to short-run pressures. The consequences have been overutilization, hydrological deficits, the intrusion of sea water into the coastal aquifers, the contamination of reservoirs, and a reduction of the carry-over capacity of the system. These detrimental effects are accumulating only gradually and are hard for nonprofessionals to detect and comprehend, but now (summer 1991) the combination of three dry years and poor reserves had forced drastic curtailment of supply with harmful effects on farms, particularly on orchards. The crisis was

aggravated when the Authority delayed its response and announced cuts in supply after the planting of summer crops.

THE CITRUS INDUSTRY

Citrus fruits, particularly oranges, were the economy's most important export at the beginning of the 1950s; at that time the area planted with citrus occupied half the irrigated land in the country. In the 1950s, the citrus area expanded; new orchards were planted as demand increased in Europe and as irrigation, skills, and availability of capital in Israel increased.

In most recent years, however, the industry has declined (table 15-2). Orchards were uprooted and exports of fresh fruits decreased over the last fifteen years to half of their previous volume. Part of the decline in tonnage reflects a shift from the bulky traditional varieties to newer, more expensive types, but most of the reduction is the result of cuts in production and diversion of fresh fruit to processing.

Table 15-2. Selected Israeli Citrus Industry Statistics

<i>Statistic</i>	<i>Average 1976-79</i>	<i>1983</i>	<i>1988</i>
Orchard area (thousands of hectares)	42	37	36
Export of fresh fruit (thousands of tons)	925	700	452
Percentage share of total production	61	45	40
Value of exports (millions of 1986 U.S. dollars)			
Fresh fruit	428	248	189
Processed fruit	210	226	344
Terms of trade of fresh fruit in export (ratio of FOB price to input price index)	100	87	89

Source: Kislev 1990

In cutting production, farmers reacted to changes in the terms of trade that deteriorated at the farm gate further than indicated in table 15-2. Growers are the residual claimants in the flow of revenue from consumers downward, and as prices in Europe declined due to an increasing supply of fruit (by Israel and its competitors), the processors, packers, and shippers continued to cover their costs.

Moreover, fruit handling costs are high. Until recently the Citrus Marketing Board was made up only of packers. Although some of them are growers in their own right, it has been and still is the interests of packers that dominate the Board. Consequently, the packing and shipping industry is run as a cartel with overcapacity and inefficiency.

By law, all marketing of citrus, both domestic and export, is handled by the Board. The Cotton Board is the only other board that directly handles the marketing of its product. The majority of the boards control their markets to some extent but are not involved directly in

commercial operations. The Citrus Board accepts the fruit from the packers and ships it to Europe lower grades are delivered to processors. Relatively small quantities go to the local consumer markets where monopoly prices are charged. The growers receive pooled prices that reflect quality and harvesting time. The Board is also responsible for pest control and planning of areas, regions, and varieties. It functions as the industry's political lobby and participates in the financing of research and its direction.

Under the leadership of the Board, the Israeli citrus industry missed two major trends in the world markets in the last decades. Israel lagged in developing and adopting new varieties of citrus, particularly easy-to-peel types and sweet grapefruit, and the industry ignored a shift in consumption from fresh fruits to reconstituted concentrated juice. Consequently, by the time the Israeli growers came to the markets with the new varieties, prices were already down to competitive levels, and Israel did not even try to develop orchards exclusively for processed fruit of the kind grown by the major producers of concentrates in Florida and Brazil.

The reduction in terms of trade and the disillusion with cooperative action in recent years have fueled a "growers' mutiny". Farmers have grouped into associations struggling for free marketing and competition in exports. Perhaps naively, they are willing to give up the advantages of their monopoly position in the local market, the bargaining power of the Board in the export markets, the economies of scale in shipping and handling, and much of the expertise accumulated through the years in the Citrus Marketing Board. To date, they have achieved only two minor gains. The Ministry of Agriculture abolished planting permits in citrus as well as in the other tree crops. By a decision of the supreme court, growers may now ship their products directly to manufacturing plants, and escape service charges of the packers and cross subsidization of exports from domestic sales. Other cases are pending before the court. If these small changes signal the direction, the Board will gradually lose its grip on the industry.³

THE FINANCIAL CRISIS IN COOPERATIVE AGRICULTURE

Eighty percent of Israel's agricultural product comes from cooperative farms. A major form of cooperation in agriculture has been financial. Financial cooperation flourished for several decades, but has found itself recently in deep crisis, the roots of which lie in the structural weaknesses of cooperation, in government action and inaction, and in macroeconomic factors, particularly inflation and the policies adopted to fight it. Debt settlement agreements have recently been reached, but it is doubtful that the sector will be able to honor its obligations.

Moshavim and kibbutzim. A moshav (plural moshavim) is a farming community in that all farms are family-owned and operated, and all farmers are members of the multipurpose, democratically-run, village cooperative. In principle (practice varies), the cooperative association in the moshav purchases all farm supplies for its members and markets their farm products. It may also own and operate a variety of service facilities and manage directly some jointly operated farm enterprises.

³ The Citrus Board was recently stripped of its monopoly power; starting with the marketing season 1991/92, competing firms will export directly.

A kibbutz is a commune. Members work together and receive from the kibbutz food, shelter, health care, education, clothing, and a relatively small monetary allowance that they may spend at their discretion. In principle, a kibbutz member owns his or her personal belongings but no other property.

Differences in the degree of cooperation induced many other operational differences between kibbutzim and moshavim. Two examples are noteworthy:

(a) As the labor force left agriculture, members of the moshavim shifted mostly to part-time farming and found additional employment off the farm. The kibbutzim, on the other hand, invested at their own risk in the creation of employment opportunities for their members in manufacturing and services.⁴

(b) Since in the kibbutzim consumption is communal, the management of a kibbutz has much larger control over the consumption level of its members than the cooperative association in the moshav. The modern kibbutz, however, cannot lag too far behind the country's standard of living, or members, particularly young members, will leave. Some are already leaving (not all for economic reasons, to be sure).⁵ These considerations dictated and still dictate much of the behavior of the kibbutzim in economic and financial affairs.

Moshavim and kibbutzim are members of two types of second-order cooperatives; supply cooperatives set up to purchase farm inputs for the moshavim and the kibbutzim, and service enterprises (feed mills, slaughter houses, transportation services, and others). Both types of supply cooperatives operate on a regional basis, though some nationwide cooperatives also exist.

*Financial Intermediation.*⁶ Starting with the transfer of suppliers' credit to their members, both the moshavim and the supply cooperatives expanded into full-scale financial intermediation. This tendency was reinforced by the fact that most farm land in Israel is nationally owned and moshavim and kibbutzim cannot use it as collateral. The pivotal role of credit intermediation in the activities of the moshav and the supply cooperative is demonstrated in their balance sheets in table 15-3. Members' debit balances were by far the largest assets the associations held 76.6 percent of the total in the moshav and 60.9 percent in the supply cooperative. The moshav and the regional cooperative raised capital and transferred it to their

⁴ There is an interesting resemblance between the final outcomes. Only a third of the operators in the moshavim draw all their income from agriculture, and farming contributes on average a third of the total income in the kibbutzim.

⁵ One dimension of the standard of living is an "exit allowance" which members are entitled to receive on leaving. It increases economic security, but kibbutzim cannot always keep this obligation, particularly now with tighter financial conditions and increasing departures.

⁶ This section depicts intermediation as it was practiced before 1985. One of the consequences of the crisis has been a great reduction in the financial interconnection between cooperatives especially in the sector of the moshavim.

Table 15-3. Balance Sheet Composition of a Moshav Association and a Supply Cooperative, September 30, 1981 (percent of total assets)

ASSETS			LIABILITIES		
	Moshav	Supply Coop	Moshav	Supply Coop	
Fixed assets	3.7	3.5	Equity	0.7	3.0
Long-term investments and loans to members	3.5	13.7	Long-term debt	4.2	19.5
Inventories	4.0	..	Short-term loans	0.6	34.5
Accounts receivable:			Short-term loans from supply cooperatives	76.9	..
Nonmembers	12.2	3.6	Members' credit balances	13.5	21.2
Regional enterprises	..	18.3			
Total Assets	100.00	100.00	Total Liabilities	100.00	100.00

.. Negligible.

Note: The data for the supply cooperative are for the regional cooperative in the "Mountain Region" (a fictitious name). The data for the moshav are for an average association in a sample of 13 moshavim in the same region. Also, balance sheets are prepared in historical values, not adjusted for inflation. Finally, the financial reports of the cooperative in the moshav are for the association, not for the whole village. Information on individual farms is not included and is generally not available.

Source: Zusman 1988.

members. The associations also functioned as clearing houses, accepting deposits from members with financial surpluses (members' credit balances in table 15-3) for use by others. The supply cooperative and its moshavim were strongly linked together: through credit, as can be seen in table 15-3, and through joint ventures in regional service enterprises. The relations between the kibbutzim and their supply cooperatives were similar to those depicted in table 15-3 but there are no financial transactions between the kibbutzim and their members.

The supply cooperatives provide the moshavim and the kibbutzim finance services with steady lines of credit and convenient saving facilities. The moshavim provided their members with the same kind of services. Interlinkages between marketing through the cooperatives and credit operations provided the institutional setup that replaced collateral for loans in cooperative agriculture. In addition, virtually all members—individuals, kibbutzim, and moshavim—were parties to mutual guarantees and all were mutually responsible for loans raised by their cooperatives. Proximity, central purchasing of inputs, product marketing, and financial interdependency should have, in principle, allowed close monitoring and control of the economic affairs of the member-borrowers. For a period cooperative credit functioned efficiently (as witnessed by the increased capital intensity in agriculture compared to industry in table 15-4), but it failed the test of extreme economic circumstances in the inflationary period, and its weakness resulted in the recent crisis.

Regional Enterprises. These are second-order service cooperatives, the members of which are moshav associations and kibbutzim who use the service offered. Often the regional supply cooperative is also a member of the regional enterprise, and in all cases the two kinds

of regionals—the supply cooperative and the service enterprises—are strongly connected financially, a relationship that proved detrimental when the recent crisis erupted.

Zealous support of rural development by public agencies, easy access to credit through the supply cooperatives, and strong political regional lobbies all resulted in overexpansion of most of the service enterprises. This occurred particularly in the 1970s when credit was ample and economic optimism ran high. Consequently, in the early 1980s, many service enterprises operated at less than full capacity and could not cover their operating costs.

In the late 1970s and early 1980s, inflation eroded most of the debt of the regional supply cooperatives but circumstances changed with the financial markets' adjustment to the inflationary environment. The supply cooperatives assumed the role of financiers of last resort, and found themselves financing not only operating losses, but also debt service of the regional enterprises. A few of the enterprises collapsed and went bankrupt in the crisis of 1985, and took the supply cooperatives down with them.

Table 15-4. Outstanding Bank Credit in Agriculture and Industry, Selected Years (percent)

<i>Year</i>	<i>Volume of Real Credit</i>		<i>Ratio of Debt to Net Capital</i>	
	<i>Agriculture</i>	<i>Industry</i>	<i>Agriculture</i>	<i>Industry</i>
1969	100	100	19	52
1974	209	219	35	69
1979	335	327	48	75
1984	491	352	67	70
1987	655	402	79	64

Note: Real credit is the index of outstanding debt deflated by the consumer price index.

Source: Kislev, Lerman, and Zusman 1991.

Government. The government has always supported cooperation in agriculture. New immigrants were settled in the cooperative moshavim as a matter of policy. Land and water were allotted to the moshav and distributed equally between the members. Production quotas were allocated on a village basis, leaving internal distribution to the moshavim, and government agencies usually consulted with the cooperative association in the moshav on the allocation of long-term loans to farm operators.

The most profound public involvement was in credit. The government raised capital on the markets in Israel for its budgetary needs, thus crowding out private sources of investment. To remedy the shortage it created, the government distributed credit and subsidized it. Moreover, it was also often ready to offer additional credit to credit enterprises—farm cooperatives in particular—which ran into difficulties. The dependency on the government and the expectation that it would bail moshavim and kibbutzim out of trouble created moral hazards.⁷ Cooperatives at all levels were willing to rely on large amounts of debt and banks

⁷ Moral hazard arises in situations where economic agents do not bear the full consequences or benefits of their actions because of uncertainty or restricted contracts; broadly, the hazard is the action of economic agents in maximizing their own utility to the detriment of others.

were willing to lend, all trusting the government to save them in case of difficulty. These moral hazards were in fact recognized by the government, which made vigorous efforts to control the consequences in the 1960s. The will to maintain a strict policy could not withstand the flood of credit in the late 1970s, however. Moreover, the government itself encouraged uncontrolled expansion and overinvestment.

Aggravating Policy Factors. The roots of the current crisis in Israeli agriculture are in excessive expansion of investment and debt of the agricultural sector and particularly of cooperative agriculture in moshavim, kibbutzim, and their regionals. The deep crisis and the difficulties agriculture now faces were aggravated by several policy factors.

One of the anti-inflationary policy measures adopted in July 1985 that was particularly hard on the production sector was a severe credit squeeze that caused an unprecedented increase in the rates of interest (100 percent per year on overdraft facilities, for example) and a reduction in credit availability. These hastened and intensified the agricultural crisis.

Another such measure was an exchange rate pegging policy adopted to stabilize the local price system (creating a "monetary anchor"). In fact, there were three events of devaluation between June 1985 and December 1988; they amounted to a change of 34 percent in the nominal exchange rate of the dollar, while the consumer price index rose 84 percent over the same period. As a result of this and other factors, terms of trade of agricultural exports deteriorated by a third between 1980 and 1988 after improving 15 percent over the 1970s.

Simultaneously with the deterioration of the terms of trade, the real value of fresh agricultural exports (not including processed food) decreased by 10 percent between the second half of the 1970s and the 1980s. Citrus exports suffered particularly (table 15-2). Since the domestic demand for agricultural products expanded only slightly, the reduction in exports was severely harmful to agriculture. The sector's income fell substantially in the 1980s.

Crisis. The crisis erupted at the end of 1985 once creditors realized that agriculture, particularly cooperative agriculture, could not continue to service its debt in view of exceedingly high post-reform real rates of interest on short-term loans, and that the government could no longer bail out the sector. Most regional cooperatives and many of the associations of moshavim collapsed. Farm production has continued, often with private credit arrangements and the farmers' own resources. But this cannot be a complete solution to the crisis, and banks and other creditors are still demanding repayment of their loans. For most members of cooperatives their heavy burden is not their own debt but their share in the mutual liabilities—their share in covering the debt of several heavy borrowers in the moshav and the debt of the regional enterprise.

Agriculture cannot repay or service its debt in full; the question therefore is how to distribute the losses. Once this was realized, the government offered support in an effort to reach a debt settlement between the banks, on the one hand, and the moshavim and kibbutzim on the other. Agreements have been formulated⁸ but their implementation has been slow as

⁸ The principal component of the debt settlement is a rescheduling of loans according to accepted measures of ability to pay. Two agreements have been signed to date, one for the moshavim and one for the kibbutzim. These are sector-level framework contracts. They have now to be implemented with every kibbutz and every

many in the sector still hope that they can gather political support for a more favorable settlement. But even if the debt settlement is approved and implemented with every kibbutz, moshav, and member of the moshav, the question should still be posed whether agriculture can be expected to service its debt.

Will Agriculture Repay its Debt? By the available estimates, agriculture debt at the end of 1988 was 6.5 billion⁹ New Israeli Shekqalim (NIS), and the value of net capital was then 6 billion NIS (\$3.8 billion respectively at 1.6 NIS per dollar). Agriculture as a whole has, by these figures, no equity of its own. All its capital is financed by debt.

The debt settlement is an agreement to erase close to a third of the debt and to reschedule the remaining obligations for a period of fifteen to twenty years; the new loans will be linked to the price index and will carry low interest rates. Assume accordingly that agriculture is left with a debt of 4.3 billion NIS to repay over twenty years at 4.5 percent; the annuity will then be 331 million NIS. In other words, if agriculture's debt is actually repaid at this rate, the sector will redeem its equity capital over the next twenty years.

This is an impossible undertaking. For even if the calculated annuity is an overestimate, if part of the short-term debt is rolled over, and debt forgiveness is somewhat larger (in order to be able to maintain its part in the settlement agreements), agriculture will have to return to the levels of profits its enjoyed in the 1970s (table 15-5). In that decade, the operating profits were upward of 300 million NIS (at 1987 prices). At such levels, with replacement of only necessary capital assets, agriculture will be able to repay its rescheduled debts. But profitability has been falling in recent years, terms of trade that were improved several years ago are

Table 15-5. Operating Profits in Israeli Agriculture, Selected Periods
(millions of NIS, constant 1987 prices)

Year	Output (1)	Purchased Inputs (2)	Labor		Depreciation (5)	Operating Profits (6)
			Own (3)	Hired (4)		
1965-67	2,116	829	854	292	188	-47
1975-77	3,927	1,792	1,094	374	302	365
1985-87	4,648	2,334	1,367	503	457	-13

Notes: Column (3) is imputed according to the sum of per laborer consumption and saving levels in the economy. Column (6) is (1)-(2)-(3)-(4)-(5). In 1987, the exchange rate was 1.6 NIS to US\$1.

Source: Lerman and Kosto 1990.

deteriorating again, technological improvements can be expected to slow down with the reduction of investment, competition in foreign markets is toughening, and domestic demand is expanding only slightly.

moshav (sometimes with every farm operator), separately.

⁹ A billion is 1,000 million.

The parties to the debt settlements were aware of these difficulties, and based a great part of their optimism on structural changes to come in the water of the crisis. The supply cooperatives will not engage in financial intermediation any longer. Regional enterprises will be limited to direct services to agriculture. Some enterprises will be closed down to reduce excess capacity and the kibbutzim will redirect labor from services to income-generating activities. Weak farms in the moshavim judged unable to repay their debts will be closed, and their factors of production distributed among the remaining members. Investment will be limited to necessary replacements and to carefully analyzed expansions.

Increased efficiency can improve the ability of a farm to repay its debt. This need not, however, be the same for an industry. In agriculture, it can reasonably be expected that if structural changes take effect and efficiency is improved, terms of trade will worsen and profitability will not increase. Moreover, the recent crisis resulted in the collapse of part of the agricultural support system and a reduction in the political willingness to budget subsidies for agriculture. It is unlikely that agriculture can now tax consumers (for this is what it amounts to) and gather the necessary profits needed to service its old debts.

If agriculture cannot cover its debt from profits, it may still do so from savings. At the recent levels (table 15-55, 1985-1987), farmers will have to divert 24 percent of their income—returns to their own labor—to debt service. This is unlikely to occur, particularly since the debt is not evenly distributed, and many will have to divert much larger shares of farm income to the repayments stipulated by the agreements. The situation is particularly difficult in many of the kibbutzim, and the necessary reduction of the standard of living may be more than their members will tolerate.

Still another alternative is for farmers to cover their debts from nonfarm sources. This is possible in the moshavim where most farmers are part-timers, but it is not clear that they can be forced to do so. The kibbutzim have to cover debts incurred by manufacturing and service activities as well as by their farming sector. They have no outside income of significant magnitude that can be diverted to the redemption of capital.

This pessimistic assessment is strengthened by slow implementation of the settlement agreements. Farmers in many of the moshavim have found that they do well without the cooperative associations that ceased to function after the crisis. They can conveniently work directly with banks and other lenders. Some have mobilized private resources, and they continue operating as if past debts will not have to be repaid. The situation is different for the kibbutzim that are hard-pressed. They have no free financial resources to put into productive activities, and because of their size must rely on banks for all their financial needs. Banks require implementation of the settlement agreement before they will renew lending to a kibbutz. Now that the government is a party to the settlement, however, the banks have eased pressure on delinquent debtors, suggesting that they expect eventual further intervention from the government. Thus, the crisis is far from solved.

CONCLUSIONS

Israel's farmers are skilled and highly motivated. College education is the norm in the kibbutzim and many in the moshavim are also professionals with profound understanding of their work. Farmers are also accustomed to acting together, and cooperation and involvement in

public affairs come naturally to them. They react speedily to economic and technological changes, adopt new varieties and methods, and reach record yields. But they are also fast to seize opportunities that may turn out to be misguided from a larger, social, perspective. When the rate of interest was negative and credit seemed to be in unlimited supply, farmers invested excessively. When water prices are low, farmers develop their operations to make the best use they can of this resource, and also find ways to cooperate politically for the expansion of low-cost supply. On the other hand, when growers received pooled prices for citrus and quality was only partly rewarded, farmers curtailed production and did not reveal their technical ability in this line.

Past performance suggests that the potential of Israeli agriculture is quite high, and that the damage done by poor policy and unsuitable institutions is also large. This is particularly true for the cooperative sector where the strength of interdependence carries with it the dangers arising from moral hazard behavior. These dangers are compounded when the government intervenes to relieve farmers of the obligations they have incurred. A major responsibility therefore rests with the government. It must have the wisdom and the power to limit its involvement in agriculture, and to let farmers be responsible for better or for worse for their acts.

Farmers will act rationally and responsibly as individuals, but collectively they will easily follow myopic, even irrational, behavior. This difference between the individual and the collective stems from a naturally limited ability to internalize external effects. The examples cited above—excess supply of water in response to grass-roots political pressure and overexpansion financed by cooperative credit—testify to this behavior. This rationality grows stronger if free riding cannot be curtailed; as a result, the ethics behind cooperatives deteriorate.

Inflation created a special opportunity for agriculture in Israel. With negative real interest rates and erosion of loans, agriculture could have increased its equity capital and emerged from the inflationary period economically stronger. This did not happen. Financial leverage increased in agriculture, returns to capital and saving were negative, and farmers sank deeper into debt. Part of the debt financed investment in productive assets (often contributing to overcapacity), part financed housing and consumer durables, and part increased current consumption and standards of living. Consideration of short-run inflationary gains dominated long-run economic health.

The crisis is a clear example of the consequences of cooperative myopia. But the cooperatives were not the only ones at fault. Credit was distributed by the commercial banks; it was their money that was lent, and it was their responsibility to secure the loans and to assure adequate ability to repay. Evidently they neglected this responsibility. Moreover, they failed to recognize that the problem was escalating beyond the scope of the government's ability to solve it.

The government, too, failed to recognize the magnitude of the problem in time to initiate remedial measures, just as it failed to safeguard use of water, Israel's most precious natural resource. The government yielded to political pressure, and created the false impression that it would bail agriculture out of any difficulty. Moreover, the government carries major blame for overcapacity in agriculture, since the funding of most of the development projects was with government approval and assistance. Decisions of the policymakers and recommendations of the Planning Authority of the Ministry of Agriculture encouraged overinvestment. The crisis

in cooperative agriculture is therefore largely the outcome of the favoritism it enjoyed for a long time.

Cooperation has many advantages and significant weaknesses. Two preconditions are needed for cooperation to survive the market test. First, members must have high levels of cooperative ethics and be willing to give up short-run gains for the long-run benefits of cooperation. Secondly, in the final analysis, members must be responsible for their acts, individually or collectively. In the case of Israel, the mutual liability is now reduced to levels that members of cooperatives, farmers in the moshav, and moshavim and kibbutzim in the regional cooperatives can actually cover. It seems that private ownership of land will now be established so that farmers may have more to lose if they fail. They may gain if they succeed and accumulate comparatively large pieces of land. The organization of agricultural cooperation will now be rationalized in Israel. The crisis made the need for reforms clear to everyone. How much cooperation will be left after this crisis is resolved is yet to be seen.

REFERENCES

- Israel Central Bureau of Statistics. Annual volumes. *Statistical Abstract of Israel*, Jerusalem.
- Kislev, Yoav, Zvi Lerman, and Pinhas Zusman. 1991. "Recent Experience with Cooperative Farm Credit in Israel." *Economic Development and Cultural Change* 39, pp. 773-89.
- Kislev, Yoav, 1990. "Studies in the Development of Agriculture in Israel" (in Hebrew). In Y. Kislev, Ed., *Technology, Cooperation, Growth, and Policy: Studies in Agricultural Economics*, Jerusalem: Magnes Press.
- Lerman, Zvi, and Noam Kosto. 1990. "Profits and the Ability of Agriculture to Repay its Debt." In *Cooperation, Growth, and Policy Studies in Agricultural Economics*. Jerusalem: Magnes Press.
- Zusman, Pinhas. 1988. *Individual Behavior and Social Choice in a Cooperation Settlement*. Jerusalem: Magnes Press.
- Zusman, Pinhas and Gordon C. Rauser. 1991. "Organizational Equilibrium and the Optimality of Collective Action." Working Paper 9105, The Center for Agricultural Economic Research, Rehevot, Israel.

AGRICULTURAL REFORM IN A SOCIALIST ECONOMY: THE EXPERIENCE OF CHINA

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One of China's accomplishments is its ability to feed over one-fifth of the world's population with only one-fifteenth of the world's arable land.¹ When the People's Republic of China was founded, cultivated land per capita was only 0.18 hectare. Due to rapid population growth, per capita cultivated land dropped to 0.10 hectare in 1978.² The country nevertheless was able to keep food production ahead of population growth. Meanwhile, the economy experienced a dramatic transformation. The share of industrial income in total national income expanded from 12.6 percent in 1949 to 46.8 percent in 1978 (SSB 1987a, p. 11). Remarkable achievements in Chinese agriculture did not occur until the farm sector reform (launched in 1979), which replaced the original collective system with a new household farming system.

Between 1952 and 1978, the growth rate in grain production was 2.4 percent per year, or only 0.4 percent above the population growth rate in the same period. Per capita availability of grain therefore increased only 10 percent over a quarter of the century (table 164,501). Frustrated by the inability to raise living standards substantially after 30 years of socialist revolution, Chinese leaders initiated a series of sweeping reforms of agriculture in 1979. The reforms resulted in remarkable growth in the first half of the 1980s.

The success of agricultural reform, especially the remarkable growth of grain output, induced an additional series of market-oriented reforms, which were undertaken at the end of 1984 in both the urban and rural sectors. Although agriculture as a whole grew at a respectable average annual rate of 4.1 percent after 1984, grain production stagnated after reaching a peak of 407 million tons in 1984 (table 16-1). Over the many dynastic transitions in the several thousand years of Chinese history, political leaders in China have come to recognize the crucial

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¹ The world and Chinese populations in 1986 were 4.916 billion and 1.051 billion respectively, while world and Chinese arable land were respectively 13.76 billion hectares and 0.96 billion hectares (SSB, 1988, pp. 993-94). A billion is 1,000 million.

² The cultivated land and population were, respectively, 97.9 million hectares and 541.7 million people in 1949, and 99.4 million hectares and 962.2 million in 1978.

Table 16-1. Population, Agricultural Output, Grain Output, and Net Grain Trade in China 1952-87

Year	Population (million)	Agric. Output (1952 = 100)	Grain Output (million tons)	Net Grain Trade (million tons)
1952	574.8	100.0	163.9	1.5
1953	588.0	103.1	166.8	1.8
1954	602.7	106.6	169.5	1.7
1955	614.7	114.7	184.0	2.1
1956	628.3	120.5	192.8	2.5
1957	646.5	124.8	195.1	1.9
1958	659.9	127.8	200.0	2.7
1959	672.1	110.4	170.0	4.2
1960	662.1	96.4	143.5	2.7
1961	658.6	94.1	147.5	-4.5
1962	673.0	99.9	160.0	-3.9
1963	691.7	111.5	170.0	-4.5
1964	705.0	126.7	187.5	-4.7
1965	725.4	137.1	194.6	-4.0
1966	745.2	149.0	214.0	-3.6
1967	763.7	151.3	217.8	-1.7
1968	785.3	147.6	209.1	-2.0
1969	806.7	149.2	211.0	-1.5
1970	829.9	166.4	240.0	-3.2
1971	852.3	171.4	250.2	-0.6
1972	871.8	169.6	240.5	-1.8
1973	892.1	183.8	265.0	-4.2
1974	908.6	190.1	275.3	-4.5
1975	924.2	196.0	284.5	-0.9
1976	937.2	195.3	286.3	-0.6
1977	949.7	194.3	282.8	-5.7
1978	962.6	210.2	304.8	-7.0
1979	975.4	226.0	332.1	-10.7
1980	987.1	229.2	320.6	-11.8
1981	1,000.7	244.0	325.0	-13.6
1982	1,015.9	271.5	354.5	-14.9
1983	1,027.6	292.6	387.3	-11.5
1984	1,038.7	328.5	407.3	-7.2
1985	1,050.4	339.7	379.1	1.2
1986	1,065.3	351.2	391.5	-0.1
1987	1,080.7	371.6	403.0	-8.9

Note: Positive figure indicates net export and negative figure indicates net import.

Source: SSB 1988 pp. 97, 38, 248, 737 and 730; China 1989, pp. 147-49, 520-22, 534-35.

importance of food production to political and social stability.³ Therefore, the optimism that robust agricultural development had generated during the first five years of rural reforms was swiftly replaced in the subsequent downturn by a pessimistic mood.⁴ A call for recollectivization of the individual household-based farming system has even emerged under the banner of pursuing economies of scale in agricultural production. China's agricultural reform is at a crossroads. This paper attempts to analyze the problems that the reforms were intended to remedy, the achievements of the reforms, and the problems that remain to be solved.

DEVELOPMENT STRATEGY AND COLLECTIVE FARMING

The agricultural problems prior to the reforms stemmed from the development strategy that the Chinese government adopted in the early 1950s. The post-reform problems also have their roots in the early development strategy.

At the founding of the People's Republic of China in 1949, the Chinese government inherited a war-torn economy in which 89.4 percent of the population resided in rural areas and industry was limited to only a 12.6 percent share of national income (SSB 1987, p. 89; SSB 1987a, p. 11). In order to strengthen national power, in 1952 China adopted a heavy-industry-oriented development strategy, as the economy recovered from war-time destruction. The goal was to build as rapidly as possible the country's capacity to produce capital goods and military materials.

Capital was extremely scarce at that time and the voluntary savings rate was far too low to finance the desired high rate of investment in heavy industry. To facilitate rapid capital expansion, a policy of low wages for industrial workers evolved alongside the heavy-industry-oriented development strategy. The assumption was that through low wages, the state-owned enterprises would be able to create large profits and to reinvest the profits for infrastructure and capital construction. The practice of establishing low prices for energy, transportation, and other raw materials, such as cotton, was instituted for the same reason. Two other policies instituted to facilitate the rapid expansion of heavy industry were low interest rates and an overvalued exchange rate.

To implement the policy of low wages, the government was required to provide urban dwellers with inexpensive food and other necessities, including housing, medical care, and clothing. A strict food rationing system was instituted in 1953 which has been in effect ever since.⁵ Meanwhile, in order to secure the food supply for rationing, a compulsory grain procurement policy was imposed in rural areas in 1953. Grain trade in China has been virtually monopolized by the state since then.

³ This political wisdom is encapsulated in an often-cited motto *wo nong bu wen* ("without a strong agriculture, the society will not be stable") in the agricultural policy debates in China.

⁴ In China, both the general public and most economists often regard grain as the whole sector of agriculture. Despite a respectable growth rate for agriculture as a whole in the past five years, agriculture is often regarded as stagnant or declining because of the grain situation.

⁵ Edible oils, pork, and sugar are rationed, in addition to grain.

The industrial development strategy also resulted in a great demand for agricultural products. First, the urban population increased dramatically from 57.65 million in 1949, to 71.63 million in 1952, and to 99.49 million in 1957 (SSB 1988, p. 97). Since the industrial strategy would not permit the use of large amounts of scarce foreign reserves to import food for urban consumption, satisfying the increasing food demand in urban areas hinged on the growth of domestic grain production. Second, since the bulk of China's exports consisted of agricultural products, the country's capacity to import capital goods for industrialization depended on agriculture's growth.⁶ Third, agriculture was the main source of raw materials for many industries, such as textiles and food processing. Agriculture, therefore, was clearly viewed as the bottleneck and major point of intervention in pursuing the overall economic development strategy in China in the early 1950s.

Under these conditions, agricultural stagnation and poor harvests would not only affect food supply, but also have an almost immediate and direct adverse effect on industrial expansion.⁷ Since the government was reluctant to divert resources from industry to agriculture, a new agricultural development strategy was adopted that would permit and foster the simultaneous development of agriculture alongside the development of industry. The core of this strategy involved mass mobilization of rural labor to work on labor-intensive investment projects, such as irrigation, flood control, and land reclamation, and to raise unit yields in agriculture through traditional methods and inputs, such as closer planting, more careful weeding, and the use of more organic fertilizer. The government believed that collectivized agriculture would perform these functions. Collectivization was viewed as a convenient vehicle for effecting the procurement of grain and other agricultural products to carry out the industrial development strategy.

The independent family farm was the traditional farming institution in rural China for thousands of years prior to the founding of the People's Republic. The typical farm was not only small but fragmented. At the time of the socialist revolution, nearly half of the cultivated land in rural China was owned by landlords who rented land to peasant families. Rent was often as high as 50 percent of the value of the main crops. A land reform program was implemented in areas under the Communist Party's control starting in the 1940s. Under this program, land was confiscated without compensation from the landlord and distributed to the tenants. The land reform program continued after the success of the revolution and was completed in 1952.

Experiments with various forms of cooperatives began even before the completion of land reform. Initially, the official approach to collectivization was cautious and gradual. Peasants were encouraged and induced to join the different forms of cooperatives on a voluntary basis. However, proponents of accelerating the pace of collectivization won the debate within the Party

⁶ In 1953, agricultural products alone represented 55.7 percent of the total value of China's exports, with another 25.9 percent consisting of processed agricultural products. Until the mid-1970s, agricultural and processed agricultural products represented over 70 percent of the total value of exports. (*Almanac* 1987, p. 954).

⁷ This argument is clearly supported by the fact that the heavy-industry-oriented development strategy had temporarily to give way to the "agriculture first strategy" after the harvest failures caused by the collectivization in the late 1950s.

in the summer of 1955. By the winter of 1957, 753,000 advanced cooperative farms, with 119 million member households, were established on a nationwide basis (Luo 1985, p. 59).

Collectivization was surprisingly successful in the initial stage. It encountered no active resistance from the peasantry and was carried out relatively smoothly. The gross value of agriculture (measured at constant prices in 1952) increased 27.8 percent and grain output increased 21.9 percent between 1952 and 1958 (table 16-1, columns 2 and 3). This experience greatly encouraged the leadership within the Party and led them to take a bolder approach. The "People's Commune," which consisted of about 30 collectives of 150 households was imposed in the fall of 1958. From the end of August to the beginning of November, 753,000 collective farms were transformed into 24,000 communes comprising 120 million households, over 99 percent of total rural households in China in 1958. The average size of a commune was about 5,000 households with 10,000 laborers and 10,000 acres of cultivated land. Payment in the commune was made according to subsistence needs and partly according to the work performed. Work on private plots, which existed in the other forms of cooperatives, was prohibited.

Billions of man-days were mobilized as expected. The communal movement, however, ended with a profound agricultural crisis between 1959 and 1961. The gross value of agriculture, measured in 1952 constant prices, dropped 14 percent in 1959, 12 percent in 1960, and another 2.5 percent in 1961. Most importantly, grain output was reduced 15 percent in 1959, another 16 percent in 1960, remained at the same low level for another year, and did not recover to the 1952 level until 1962. The dramatic reduction in grain output resulted in widespread and severe famine. Thirty million people were estimated to have died of starvation and malnutrition during this crisis.

A more realistic approach towards agricultural development was adopted after the 1959-61 crisis. The mobilization of rural labor for public irrigation projects continued. Greater emphasis was given to modern inputs. Irrigated acreage increased gradually after 1962. Additional acreage resulted from increasing powered irrigation rather than the construction of labor-intensive canals and dams. The utilization of chemical fertilizer was accelerated after 1962, accompanied by the promotion of high-yield, fertilizer-responsive modern crop varieties. Dwarf varieties of rice and wheat were introduced in the early 1960s. By the end of the 1970s, about 80 percent of the traditional varieties of rice and wheat had been replaced by the modern dwarf varieties. After 1976, dwarf varieties of rice were replaced by higher-yielding hybrid rice. Modern varieties of corn, cotton, and other crops were also introduced and promoted in the 1960s and 1970s. The pace of mechanization also accelerated after 1965, especially during the 1970s.

Despite dramatic increases in modern inputs in the 1960s and 1970s, the performance of agriculture continued to be poor. The total factor productivity in the 1970s before the reform in 1979 reached only about three-fourths of that in 1952. Although great emphasis was given to self-sufficiency, China changed from a net grain exporter in the 1950s to a sizeable grain importer after 1962 (table 16-1). The primary cause for the poor agricultural performance before the 1979 reform was the inadequate incentive structure in the collective system (Lin 1988).

RURAL REFORMS IN CHINA

The discouraging picture of Chinese agriculture came to an end in 1978 when China started a series of fundamental reforms in the rural sector. Output growth accelerated to a rate several times the long-term average in the previous period. Between 1978 and 1984, the annual growth rates of the three most important crops, namely grain, cotton, and oil-bearing crops, averaged respectively, 4.8 percent, 17.7 percent, and 13.8 percent, compared with the average rates of 2.4 percent, 1.0 percent, and 0.8 percent per year in the preceding 26 years (from 1952 to 1978). For the crop sector and agriculture as a whole, the growth was equally impressive; average annual growth rates rose from 2.5 percent and 2.9 percent to 5.9 percent and 7.4 percent (table 16-2). In 1985, China became a net grain exporter for first time in a quarter of a century (table 16-1, column 4).

Table 16-2. Average Annual Growth Rates of Agricultural Output, Selected Periods (percent)

Year	Agricultural Output Value	Crop Output Value	Grain Output	Cotton Output	Oil Crops Output	Popu- lation
1952-78	2.9	2.5	2.4	2.0	0.8	2.0
1978-84	7.4	5.9	4.8	13.8	1.3	
1984-87	4.1	1.4	-0.2	-12.9	8.3	1.3

Source: China 1989, pp. 112-15, 146-49, 189-92; SSB 1988, p. 97.

The dramatic output growth was a result of a package of reforms that reduced the functions of ideology and plans and gave priority to the roles of individual incentives and markets. Broad changes in rural policy began at the end of 1978. The importance of giving enough incentives to farmers in order to break the bottleneck of agricultural production was recognized.

PRICE REFORM

The most important policy change originally intended by the government at the beginning of the reforms was the adjustment of procurement prices for major crops. Before the reform, two distinct prices, quota prices and above-quota prices, existed in the state commercial system. Quota prices applied to crops sold in fulfillment of procurement obligations; above-quota prices to crops sold in excess of the obligation. Announced at the end of 1978 and effective in 1979, quota prices increased 20.9 percent for grain, 23.9 percent for oil crops, 17 percent for cotton, 21.9 percent for sugar crops, and 24.3 percent for pigs. The average increase for the quota prices was 17.1 percent. In addition, the premium paid to the above-quota delivery of grain and oil crops was raised from 30 percent to 50 percent of the quota prices, and a 30 percent bonus was instituted for above-quota delivery of cotton.⁸ The average increase in the state

⁸ For a detailed chronology of the price changes in 1979 and thereafter, see Sicular (1988).

procurement prices was 22.1 percent. However, if only the marginal prices, that is the above-quota prices, are considered, the increase in the state procurement prices was 40.7 percent (table 16-3, column 1).

Corresponding to the increase in procurement prices, retail prices were raised 33 percent for pork, 32 percent for eggs, and 33 percent for fish in 1979. Retail prices for basic necessities, such as grain and edible oils were not changed. To compensate for the raise in retail prices of pork, eggs, and fish, each urban dweller was paid 5 to 8 Yuan (Y) a month.⁹ Therefore, the government's subsidies increased as a result. The financial burden became especially high when the unexpected output growth started to emerge in 1982. Price subsidies increased from Y 9.4 billion (8.4 percent of the state budget) to Y 37 billion (24.6 percent of the state budget) in 1984 (SSB 1988, pp. 747 and 763). As a way of reducing the state's burden and increasing the role of markets, mandatory procurement quotas were abolished (for cotton in 1984 and for grain in 1985) and replaced by procurement contracts to be negotiated between the government and the farmers. The contract price was a weighted average of the basic quota price and above-quota price. This change resulted in a 9.2 percent decline in the price paid to farmers (table 16-3). However, following the decline of grain and cotton production in 1985 and stagnation thereafter (table 16-3), the contracts were made mandatory again in 1986 (Sicular 1988).

INSTITUTIONAL REFORM

Unlike the price reform, the change in the organization of farming from the collective system to the household-based system, now called the household responsibility system, was not intended by the government at the beginning of the reforms. Although it had been recognized in 1978 that solving managerial problems within the production team system was the key to improving incentives, the official position at that time maintained that the production team was to remain the basic unit of production management and accounting. Subdivision of collectively owned land and delegation of management down to individual households were both considered the reverse of socialist principles and were prohibited. Nevertheless, towards the end of 1978 a small number of production teams, first secretly and later with the blessing of local authorities, began to try out the system of contracting land, other resources, and output quotas to individual households. A year later, these teams brought in yields far larger than those of other teams. The central authorities later accepted the existence of the new form of farming, but required that this practice be restricted to the poor agricultural regions, mainly to the hilly, mountainous areas and poor teams in which people had lost confidence in the collective. However, most regions ignored this restriction. Full official recognition of the household responsibility system as a universally acceptable mode of farming was eventually given in late 1981, two years after the initial price increases. By that time, 45 percent of production teams in China had already disbanded in favor of the household responsibility system. Thus, the shift in the institutional structure of Chinese agriculture by and large evolved spontaneously in response to underlying

⁹ "Quanguo wujia gongzi huiyi jiyao" (Summary of national conference on wage and price) in SSB 1988, pp. 8-14.

Table 16-3. Price, Cropping Patterns, and Cropping Intensities in China, 1965 and 1970-87

Year	State Above-Quota/ Contract Price (1978 = 100) (1)	Household Responsibility System (percent) (2)	Sown Area		
			Grain Crops (percent) (3)	Cash Crops (percent) (4)	Other (percent) (5)
1965	84.1	0	83.5	8.5	8.0
1970	97.2	0	83.1	8.2	8.7
1971	98.4	0	83.1	8.2	8.7
1972	98.4	0	81.9	8.5	9.6
1973	98.1	0	81.6	8.6	9.8
1974	98.4	0	81.4	8.7	9.9
1975	98.7	0	81.0	9.0	10.0
1976	99.4	0	80.6	9.2	10.2
1977	100.0	0	80.6	9.1	10.3
1978	100.0	0	80.4	9.6	10.0
1979	140.7	1	80.3	10.0	9.7
1980	140.4	14	80.1	10.9	9.0
1981	145.1	45	79.2	12.1	8.7
1982	144.3	80	78.4	13.0	8.6
1983	144.9	98	79.2	12.3	8.5
1984	142.5	99	78.3	13.4	8.3
1985	129.4	99	75.8	15.6	8.6
1986	130.1	99	76.9	14.1	9.0
1987	130.2	99	76.8	14.3	8.9

Source: Column (1) is taken from Lin 1989. Column (2) indicates the percentage of production teams in China that had adopted the household responsibility system. The data for 1979-81 are from *Jingjixue Zhoubao*, January 11, 1982. Figures for 1982-84 are taken from *Zhongguo Nonque Nianjin 1984*, p. 69; and *Zhongguo Nonque Nianjin 1985*, p. 120). Figures for 1985-87 are inferred from the fact that there has been no major change in the farming institution since 1984. Columns (3) to (5) are taken from China 1989 (for 1984, p. 132; 1989, pp. 130-31, 355-57) and SSB 1988, pp. 224, 243, 276).

economic forces (Lin 1987).¹⁰ By the end of 1983, 98 percent of production teams in China had adopted this new system (table 16-3, column 2).

When the household responsibility system was originally introduced, the collectively-owned land was leased to each of the households in a team for one to three years. Along with the land lease was a contract between the household and the team, specifying the household's obligations to fulfill state procurement quotas and to pay various forms of local taxes.¹¹

¹⁰ For a chronology of the policy evolution, see Ash 1988. For a summary of the development from variants of the responsibility system to the household responsibility system (HRS), see Kueh 1984. For a discussion of some new issues related to HRS, see Kojima 1988.

¹¹ Crook 1985 provides a detailed analysis of a model contract.

However, a household could retain any product above the stated obligations. In the distribution of land leases, equity was the general guiding principle. Therefore, collective land in most cases was leased to households in proportion to their size, without taking the inter-family differences in the size of labor force into consideration (Kojima 1988). This pattern of land allocation inhibited efficient land use. Moreover, at the initial distribution, land was first classified into several different grades, and then households were allocated a parcel from each grade. As a result, a household's holding on the average is now fragmented into nine tracts, although the size of the holding is only about 1.2 acres. The initial one- to three-year short contract was found to provide inadequate incentives to invest in land improvement and soil-fertility conservation.¹² As remedies to the above problems, several new policies were introduced. Households were allowed to exchange labor with other households and to employ a limited amount of labor for farm work in 1983 (Kueh 1985), and, for the purpose of providing better incentives for soil conservation and investments, leaseholds were extended to fifteen years in 1984.

The national policy so far still stresses the importance of maintaining institutional stability of the newly established household farming system. However, the doctrine of equating farm machinery to advanced technology and large farm size to efficiency is still deeply rooted in the minds of many Chinese scholars and prominent leaders (Ash 1988).¹³ Because of increasing concern regarding the stagnation of grain production after 1984, calls for recollectivization under the guise of enlarging operational size to exploit returns to scale have reemerged. In some localities, this resulted in contract disruption before expiration without the consent of farmers (Jiang 1988). It is thus possible that the economic independence and greater freedom given to farmers in the past ten years may be revoked again (Johnson 1989).

MARKET AND PLANNING REFORM

The third most important element of the reform is the greater role given to markets, in place of planning, for guiding production in the rural sector. Planning in agriculture before the reforms emphasized self-sufficiency in grain, which was a component of the heavy-industry-oriented development strategy that the Chinese government had pursued since 1952. Because state grain procurement prices were depressed, the more grain an area exported, the more tax it paid. Areas with comparative advantage in grain production were thus reluctant to raise the level of grain output. Consequently, grain-deficit areas had to increase grain production if grain demand increased due to growth in population or income. National self-sufficiency thus degenerated into local self-sufficiency. To guarantee that each region would produce enough grain for its needs, planning of agricultural production was thus extensive before the reforms. Mandatory targets often specified not only sown acreage of each crop but also yields, levels of inputs and so forth. Since grain was given priority in the planning, insufficient attention was given to economic considerations. In order to increase grain output to meet state procurement

¹² Wen 1989 provides a theoretical investigation of the possible impacts of tenure insecurity on long-term farm investments.

¹³ For an insightful critique of this doctrine, see Schultz 1964, Chap. 8.

quotas and local demands, the local government was often forced to expand grain sown area at the expense of cash crops and to increase cropping intensity, even though these practices often resulted in a net loss to farmers. Such measures undoubtedly caused a misallocation of land. The inefficiency was especially serious in areas that traditionally depended on interregional grain trade to facilitate specialization in cash crops.

The loss of allocative efficiency caused by the self-sufficiency policy was conceded at the beginning of the reforms. Although planning was still deemed essential, more weight was given to market considerations. The decision to increase grain imports, cut down grain procurement quotas, and reduce the number of products subject to planning reflected such an intention.¹⁴ Moreover, restrictions on interregional trade for agricultural products by private traders were gradually loosened (Sicular 1988). Special measures were also taken to encourage areas which traditionally have comparative advantages in cotton production to expand cotton acreage.¹⁵

All the above policy changes reduced the role of direct state intervention and increased the function of markets in guiding agricultural production. As a result, cropping patterns and cropping intensities changed substantially between 1978 and 1984, largely in conformity with comparative advantage. The area seeded with cash crops increased from 9.6 percent of total sown acreage in 1978 to 13.4 percent in 1984, a 41.6 percent increase in relative terms.

At the beginning of 1985 the state announced that it would no longer set any mandatory production plans in agriculture, and obligatory procurement quotas were to be replaced by purchasing contracts between the state and farmers.¹⁶ The restoration of household farming and the increase in market freedom prompted farmers to adjust their production activities in accordance with profit margins. Acreage sown to cash crops further expanded from 13.4 percent of the total sown acreage in 1984 to 15.6 percent in 1985, while the grain-sown acreage declined from 78.3 percent in 1984 to 75.8 percent (table 16-3). Expansion in animal husbandry, fishery, and subsidiary production was even faster. As a result of these adjustments, agricultural output still grew at a respectable rate of 3.4 percent in 1985. Nevertheless, the aggregate output of the cropping sector declined 1.9 percent. Among the three most important crops, the output of grain declined 6.9 percent and cotton 33.7 percent; only oil crops registered a 33.3 percent increase in 1985. The stagnation of the cropping sector lingered after 1985 (table 16-3).

From the very beginning, the market-oriented reforms aroused anxiety among some members of government. Concerns over "loss of control" were widely reported in the early 1980s (Sicular 1988). When growth was rapid between 1978 and 1984, the pro-market group was able to push further for market orientation. However, when the growth rates slowed down and grain output declined in 1985 and thereafter, the government retreated from the policy

¹⁴ The net grain import increased from 6.9 million tons in 1978 to 14.9 million tons in 1982 (China 1989, pp. 522 and 535). The grain purchase quota was reduced 2.5 million tons in 1979 (Ash 1988). For example, the number of planned product categories and obligatory targets was reduced from 21 and 31, respectively, in 1978 to 16 and 20 in 1981 and further to only 13 categories in 1982 (Kueh 1984).

¹⁵ After 1979, farms that delivered more than their quota of cotton could buy grain at unusually low prices. This made a huge expansion of cotton acreage possible in the traditional cotton-producing areas.

¹⁶ *Zhongguo Nongye Nianjin 1985*, pp. 1-3.

announced in 1985. This policy was not formally reversed, and the government still hoped to rely on market measures to stimulate grain production. The voluntary procurement contract was made mandatory again, yet the government reduced the quantity of grain procurement contracts by 22 percent in 1986, and again by 10 percent in 1987. This measure increased the quantity of grain sold to the government at "negotiated prices," which are higher than contract prices and closer to market prices. The government also instituted a policy called "three linkups," and awarded subsidized credit, chemical fertilizer, and diesel to grain, cotton, and selected crops (Sicular 1988).

Administrative intervention in marketing and production has been increasing. For example, to facilitate the fulfillment of procurement quotas, local governments often limited markets for grain, cotton, tobacco and so forth. This intervention in production is revealed by the decline in acreage sown for cash crops after 1985 (table 16-3). Coupled with China's irrational producer price policies for the main grains, a lack of locally-produced feeds has seen the considerable diversion of small grains during the 1980s to the feeding of pigs and poultry, which is an inefficient feeding regime at best, and has no doubt contributed substantially over the decade to the buildup of net imports of rice and (to a lesser extent) wheat. As a result, China has moved from being a price setter in the international rice market (which is thin in any event) to a passive position, but through its import of wheat and its large but fluctuating export of maize, has begun to exert fairly significant pressure on the levels and trends in international pricing of these commodities. Only in 1989 did grain output reached a level close to 1984.¹⁷ Facing stagnant grain production, the state monopoly in regional grain trade and marketing of chemical inputs was instituted again in 1989.

Price changes, the tolerance and recognition of the household responsibility system, and the greater role given to markets all contributed positively to the remarkable growth in output between 1978 and 1984. A careful econometric analysis, using province-level input-output data covering the period 1965 to 1987 and employing a production function approach, found that of the 42.2 percent output growth in the cropping sector in 1978-84, 43.6 percent can be attributed to productivity growth due to reforms. Of the productivity growth, 94 percent is attributable to the changes in farming institutions from the production team system to the household responsibility system, and the remaining 6 percent derives from the combined effects of increases in prices, and changes in cropping patterns and intensities. The latter two items are related to reforms in the role of markets and planning (Lin 1989).¹⁸

¹⁷ The grain output in 1988 was 394.08 million tons (SSB 1989, p. 197), which is 3.2 percent lower than the output in 1984.

¹⁸ Estimates using Solow-Denison-type growth accounting by McMillan and others (1989) and Wen (1989) also find that the household responsibility system reform is the main source of productivity growth in 1978-84. It is worth noting that although the price reform may not have as dramatic an impact on total factor productivity as the institutional reform, it may have a strong impact on output growth. Higher output prices may induce farmers to increase inputs; therefore, a supply response is expected.

Table 16-4. Natural Calamity and Irrigation in China, 1953-88
(percent)

Year	Sown area hit by Natural Calamity (1)	Share of Total Government Investment in:	
		Water Control (2)	Agriculture (3)
1953	4.9	5.4	8.6
1954	8.5	2.3	4.2
1955	5.2	4.1	6.2
1956	8.2	4.5	7.7
1957	9.5	5.1	8.3
1958	5.2	7.3	9.8
1959	9.7	7.0	9.4
1960	15.3	8.2	11.6
1961	18.6	8.0	13.3
1962	11.9	11.6	20.2
1963	14.3	12.4	23.0
1964	8.8	10.4	18.6
1965	7.8	8.4	13.9
1966	6.7	8.4	13.9
1967	—	—	—
1968	—	—	—
1969	—	—	—
1970	2.3	—	—
1971	5.1	—	—
1972	11.6	—	—
1973	5.1	—	—
1974	4.4	—	—
1975	6.7	6.3	9.3
1977	10.2	7.4	10.8
1978	16.8	6.9	10.5
1979	10.2	6.7	11.0
1980	15.4	4.7	9.2
1981	12.9	3.0	6.5
1982	11.2	3.2	6.0
1983	11.3	3.5	5.9
1984	10.6	2.7	4.9
1985	15.8	1.7	3.3
1986	16.4	1.5	3.0
1987	14.1	1.6	3.1
1988	16.5	1.5	3.0

— Not available

Note: Column 1 refers to sown hectareage reported to be hit by flood, drought, frost, and hail, and to have 30 percent or more reduction in yield compared to normal yield.

Source: China 1989, pp. 354-357; SSB 1987, p. 479; SSB 1988, p. 572; SSB 1989, pp. 192, 229, 490; SSB 1987b, pp. 71-75.

Table 16-5. *Ratio of Rural Free Market to Border Prices, 1987-88*

Commodity	<i>At the Official Exchange Rate</i>		<i>At a Shadow Exchange Rate</i>
	1987	1988	1988
Milled Rice at unit export price	1.09	0.90	0.51
Wheat at unit import price	—	1.50	0.85
Corn at unit import price	1.10	0.98	0.56
at unit export price	1.30	1.08	0.61
Soybeans at unit import price	1.13	—	—
at unit export price	1.18	—	—

— Not available.

Source: Burcroff and Piazza 1990.

INTERNATIONAL TRADE

Foreign trade is an integral part of China's national economic planning. During the 1980s, China's agricultural foreign trade system continued to be highly administered, showing large real distortions between domestic and border prices for the more important traded commodities (table 16-4). However, procurement for export at administered quota prices and sales of imports at the urban ration prices, considerably lower than free market prices, accounted for the bulk of commodities traded. Thus, the effective relative prices were considerably more distorted than a comparison of free market and border prices would indicate. The official exchange rate was overvalued in 1988. When valued at a shadow exchange rate of, say, Y 6.5/US\$1.00, 1988 rural free market prices were only between 51 percent (for rice) and 85 percent (for wheat) of the corresponding border prices. This comparison implies that tremendous economic rents accrued to the state in the export of rice and corn. Similarly, huge economic subsidies were absorbed in the import and subsequent domestic sale of wheat and corn.

This picture is corroborated by international comparison. The Trade Analysis Division of USDA's Economic Research Service has computed producer subsidy equivalents (PSEs) and consumer subsidy equivalents (CSEs) for 22 agricultural commodities in 13 regions and countries including China. Estimates for China are reported by USDA for the trade year 1986/87 on the basis of observed differences between domestic and border price equivalents. As shown in table 16-6, the pattern of PSEs and CSEs in China is very different from that in most industrial market economies (IMEs) and the USSR. While producers in industrial economies tended to be supported (positive PSEs), producers in China are severely taxed. Conversely, while consumers in the industrial market economies bear high taxes (negative CSEs), though not in

the Soviet Union, consumers in China enjoy substantial subsidies. The Chinese pattern is similar to many low-income developing countries that subsidize consumers and tax producers, though the magnitudes of taxation and subsidies appear to be much higher in China.

China's import and export of grain and animal products continues to dominate the country's agricultural foreign trade. During the 1980s, China joined the U.S., the EC, and the USSR as a dominant force in the international grain economy. China is now the world's largest producer of grains, accounting for nearly 20 percent of the world's output in recent years. With 22 percent of the world's population, China is also the largest consumer of agricultural products. By the end of the 1980s, China had become responsible for more than one-third of the world's rice production and utilization, about 20 percent of its wheat, about 15 percent of its maize, and (as a producer) more than 10 percent of the world's soybeans and one-third of the world's total feed grains.

Table 16-6. The Direction of Agricultural Support and Taxation in Selected Countries

<i>Item</i>	<i>USA</i>	<i>EEC</i>	<i>Japan</i>	<i>USSR</i>	<i>Other Developing Importers</i>	<i>China</i>
CSEs	-	-	--	++	+	++
PSEs	++	++	++	++	-	--

Legend: + < 20%
 ++ ≥ 20%
 - < 20%
 -- ≥ 20%

Note: Determined by sign, PSEs and CSEs are estimates of the degree of subsidization or taxation (direct and indirect) placed on a commodity as a result of government incentives, the country's foreign trade framework, domestic marketing and incomes policies, tax policies, and the regulatory framework.

Source: U.S. Department of Agriculture, Bureau of Economic Research.

LAND, LABOR AND INPUT MARKETS

While the reforms outlined in the preceding sections address important parts of the agricultural economy, restrictions in other areas help to maintain a considerable degree of inefficiency. Liberalization of the land market is incomplete, labor mobility is constrained, and the production and allocation of material inputs such as fertilizers is still state-controlled.

The household responsibility system in China provides farmers with a fifteen-year land lease. As long as local authorities refrain from tampering with these contracts, farmers will have an adequate sense of tenure security and a fairly long planning horizon for many types of farm investments. However, the land leases cannot be inherited, and until recently were not transferable among farmers by sublease or by sale; neither were they mortgageable. The constitution was amended in April 1988 to authorize and legalize the transfer of land use rights. However, policies, regulations and administrative mechanisms to facilitate a land market have been promulgated only in May 1990, and have not yet been implemented. The inability to conduct land transactions has obvious adverse implications for efficiency. The constraint is

especially harmful given the high degree of fragmentation and the extremely small size of farms in parts of China. A land market would facilitate consolidation. It would also enable reallocation of land to those who have higher productivity.

In the wake of decollectivization and the stunning growth of off-farm employment opportunities in both urban and rural areas, China's "floating" labor force burgeoned, and the traditional destinations of the migratory work force shifted away from the frontiers towards the rapidly growing coastal areas and major metropolitan areas. By some estimates, the size of the migratory work force now includes some 20 million people. However, in an effort to limit growth of a "marginalized" urban population so characteristic of other developing countries, the government of China has not formally authorized these movements. The result is that the work force is being channeled into seasonal and temporary work, thereby having little real effect on the "mainstream" urban markets. In parts of rural China where shortages of agricultural labor are appearing, local governments are introducing farm mechanization programs.

Since the government is neither willing to authorize nor able to prevent this informal migration, the immediate effect of the land and labor policies discussed above is the maintenance of fragmented labor markets in both the urban and rural areas, accompanied by losses in economic efficiency and limits to potential growth. Because the floating population is not eligible for urban residency permits, it is denied access to urban services and food ration coupons, causing people to live in semi-squalor while pursuing a fairly perilous existence. As the size of the migratory work force continues to increase, the plight of these workers will become an increasingly important issue.

The major material inputs in Chinese agriculture are by and large not distributed by market mechanisms. Fertilizer marketing in China is centralized. From 1982 to 1988, certain components of the marketing system were liberalized, but China reimposed central control in January 1989. The allocation of fertilizer is linked to crop procurement by the state. About two-thirds of all fertilizer is allocated in exchange for crop procurement. The Agricultural Inputs Corporation (AIC) at national, provincial, and county levels, is responsible for wholesaling about 90 percent of all the fertilizer, and the Supply and Marketing Cooperatives are responsible for retailing 85 percent of AIC fertilizer. Fertilizer losses (both physical and chemical) are estimated to be high because existing fertilizer storage and transport facilities are not adequate. Fertilizer supply is allocated (based on productivity, procurement target, and remoteness) by the higher authorities, irrespective of local demand. The mandatory allocation of fertilizer to regions and crops also does not take into account crop response to applied fertilizer. As a result, there is potential loss in crop output.

Fertilizer prices in China are administered, generally kept low, sometimes are arbitrarily determined, and often are not adjusted (especially plan prices) for several years. At present, China follows a dual pricing policy which consists of plan and negotiated prices. Market prices are allowed to fluctuate within maximum price guidelines. The price spread between different prices could be very large. For example, during 1988, urea was sold at Y 520/ton plan prices, Y 700/ton negotiated prices, and Y 1,000/ton market prices. Fertilizer marketing costs are fixed and do not reflect the actual economic costs.

Nutrient/crop price ratios in China are comparable to those in many other developing countries. However, plan prices are highly subsidized both directly and indirectly. A conservative estimate of the total financial cost of the fertilizer subsidy in 1988 was about \$1.91

billion. The subsidy generates excess demand among many farmers. While some free-market trading takes place, the "free" markets are fragmented geographically and are not efficient.

The supply of diesel is centrally allocated through provincial authorities. Since diesel serves sectors other than agriculture, there are competing claims on the available supply; these are resolved essentially by bureaucratic rules and not by the market mechanism. There are three different prices for diesel: the official or subsidized price, the "high" price, and the negotiated price. Diesel fuel at subsidized prices is allocated by the government. Up to 1982, diesel fuel was sold at a unified price held constant over several years. The high price was introduced in 1982, primarily for sales to industry. The negotiated price system was introduced in 1986. Diesel supply was linked with contract grain purchase (5 kg diesel/100 kg grain) in 1986. During 1987, the high and negotiated prices were higher than the subsidized price by 60 percent and 120 percent, respectively. Similar problems of misallocation characterize the supply of electricity.

The existing input (fertilizer, diesel, electricity) distribution system has several problems. Input supply linked to contracted output is difficult and expensive to administer. Since there is generally a shortage of fertilizers, diesel, and electricity, the contract input supply system results in leakage and corruption. Also, subsidizing farm inputs results in a large financial burden. Finally, market distortions (and many prices) not only confuse the farmer but also result in waste and misallocation of scarce farm inputs. For example, areas with canal irrigation do not really require diesel for irrigation, yet the linkage system allocates it in proportion to contract grain purchase. This results in waste and economic loss to the nation. In the case of fertilizer, farmers do not always get the type of fertilizer they want or an adequate quantity. The distribution systems for fertilizer, diesel, and electricity are inefficient, rigid, and complicated to administer. There is also a need to simplify the complex fertilizer pricing system.

AGRICULTURAL INVESTMENT AND FINANCE

Structural change on the real side of the agricultural sector has been accompanied by a change in agricultural financing and a shift in priorities. This became especially pronounced after the reforms were introduced. In 1984, the year of China's largest grain harvest until last year, total state spending on agriculture was actually below what it was in the first year of the reforms. In recent years, agricultural spending has picked up again (at least in nominal terms) but as a proportion of total state expenditures, agriculture's share has shown a declining trend in the last ten years. In Chinese agriculture, the prioritization and programming of public expenditures has fallen hostage to the devolution of fiscal responsibility, which militates against substantial support for nonrevenue earning activities. The operation of services expected from these investments probably has also suffered from an excessive fragmentation that continues to typify public sector agricultural programs in China. Thus when trying to ascertain "revealed" financing priorities, the expenditure picture becomes cloudy since a flow of funds accounting for the agricultural sector, or anything approaching one, is not available. Nonetheless, roughly half of the state's capital construction budget for agriculture in 1987 (Y 2.1 billion) was allocated to "water conservancy," mainly for irrigation and drainage construction.

Announcements to the contrary aside, an examination of central government expenditures reveals that the state has been unable to reallocate a measurable portion of state expenditures to

agriculture. This may be related to the difficulties that the state has encountered when trying to reverse the devolution of expenditure and revenue retention authority. The state's reluctance to reallocate measurable sums has also undoubtedly been influenced by the continuing priority given to China's manufacturing and export development programs and sensitivity to urban unrest. The pattern of provincial and local expenditures has given even more emphasis to more profitable nonagricultural expenditures. The recent consolidation of off-budget funds under the umbrella of the newly established Agricultural Development Fund (ADF) may help to stimulate official expenditures for agriculture, though the magnitudes still are not large (Y 2 billion to Y 3 billion per annum).

Accompanied by decollectivization—or perhaps because of it—and a substantial devolution of expenditure and fiscal authority to local government, the locus of agricultural financing shifted from budgetary expenditures through finance bureaus to the state-owned and specialized banks, and to various non-bank financial intermediaries that have proliferated in rural China during the 1980s. In this system, the Agricultural Bank of China (ABC) and the ubiquitous Rural Credit Cooperatives (RCC) predominate, but are by no means the only alternative channel. Their lending operations expanded rapidly during the 1980s, especially after 1984 (when devolution was complete). Most of the approvals were for short-term advances, however, including large advances to the grain bureau to finance enterprise losses and grain procurement campaigns. Lending for agricultural investment was minimal.

Agricultural subsidies, urban grain subsidies, agricultural import subsidies, and the operating losses of the grain bureau enterprises should be considered in addition to direct grants and loans through the financial system. About 85 percent of the comprehensive agricultural subsidy is absorbed by grains and oils ("grains") and a small additional amount by cotton. The amount of subsidy is larger than the state's direct expenditure for agriculture in 1988, and about twice in the value of annual growth in gross value of agricultural output since 1984.

During the coming years, both under the near-term regime of macro-financial stabilization and into the medium term, it may prove difficult for China to finance the state's ambitious grain production goals and food security policies. There are questions of feasibility in the fiscal and financial sectors that correspond to the appropriateness of targets established in the real sector. Assuming that the grain production targets are at least feasible, the financing of an ambitious program will require a fundamental reordering of inter-sectoral financing priorities, some reversal of the devolution of revenue and expenditure authority, and a marked reduction in consumer and grain marketing subsidies.

Investment Priorities. Meeting future agricultural growth requirements will depend critically on increases in both cropping intensity and in yields on existing cultivated land, and on improvements in the quality of production. An expansion of investment in agricultural services and infrastructure will be key to realizing these goals. One particular area of concern is the technology generation and transfer nexus.

Food Subsidies. A long-standing policy objective is to maintain self-sufficiency in grain production. Currently the Chinese consume about 400 kilograms per capita per year of grains, which has become planners' datum. China has been largely successful in achieving self-sufficiency in most grains and animal products, though with some recent deterioration. In the

wake of decollectivization, however, there has been a growing imbalance between the commodity composition of grain production, a rapidly increasing demand for feed grains, and a fairly flat demand for table grains, much of which reportedly is being diverted to supplemental feeding of animals.

Doubling ration grain prices approximately to equal average procurement prices or tripling ration prices to bring them in line with free market prices would decrease direct grain consumption in urban areas and perhaps have a positive impact on demand for other foods. On the other hand, it would hurt the urban poor. In 1988, among the poorest 10 percent of registered urban households, grain was about 10 percent of expenditures, compared with 6 percent for the decile with greatest income. It is estimated that increasing ration grain prices to free market levels would decrease poor households' real income by more than 20 percent. It will be essential to target reduced levels of grain subsidies to those in real need.

Formal eligibility to receive urban grain rations is restricted to holders of urban residency permits. The urban poor, many of whom have been unable to obtain (or are still awaiting) formal certification of residency, are made up of a mix of lower level government officials, retirees, and recent migrants enjoying only indirect access to ration coupons. Unlike the bulk of the urban population, the urban poor remain dependent on grain rations to maintain a decent standard of food consumption. There is no question that the government will have to reform further the grain rationing system.

Over the longer term, China will have to consider whether self-sufficiency in grain production is a viable strategy. The costs of maintaining the current (highly subsidized) system have been noted. If China has also reached its effective grain production frontier, there is also the likelihood that further gains in production will entail costly infrastructure investments, expansion onto reclaimed and marginal lands, and the substitution of relatively high-value agricultural activities with the production of relatively low-value grain. China may be well advised to seek a lower degree of grain self-sufficiency, making up the difference through imports.

AN UNFINISHED AGENDA

Grain Pricing and Marketing. Perhaps the most important unfinished business in China's agricultural reform milieu concerns the halfway state of current pricing and marketing reform. In a sense, the "easy" steps have been completed, though an uncomfortable mix of central planning and (limited) reliance on the market continues to hinder performance and efficiency in the all-important grain sector.

Conceptually, the completion of China's agricultural pricing and marketing reforms would seem rather easy: merely do away with "two-track" pricing and assign full responsibility to market forces for the allocation of China's grain supplies. However, a number of important institutional issues will have to be solved first, not the least of which are the near complete monopoly of the state commercial system in the realm of both grain and input distribution, the sorry state of much of China's storage and handling infrastructure, the continued long-distance transportation constraints, and the ubiquitous urban grain rationing system—which in the face of political sensitivities and the lack of an adequate safety net for the urban poor—may elude quick reform. All of these militate against a quick fix. All require substantial investments to

improve the distribution and transportation infrastructure. It is thus probably naive to assume that interregional markets could be created and begin to function efficiently overnight through the simple expedient of price liberalization. On the other hand, China simply cannot afford the costs, financial and economic, of maintaining the existing system.

Under these circumstances, reform should be progressive but phased, starting first by raising the administered grain procurement and urban ration prices for grains while initiating investments to improve China's marketing capacity.

In parallel, to prepare for a more complete liberalization perhaps two or three years from now, the Chinese government should review the role of the grain bureau system, and identify institutional, legal, regulatory, and other measures needed to break its effective monopoly in grain distribution. The grain bureau system should change its purpose to grain market regulation: maintaining strategic stockpiles, price stabilization, seasonal procurements and disposals in regions that experience extreme glut or shortages, emergency relief, and subsidized transfers to chronically poor and remote areas. Meanwhile, enterprises outside of the state commercial system should be encouraged to enter the grain trade in order to gain experience, perhaps initially by renting stores and facilities from the grain bureau's enterprises, being allocated space on the state railway system, and given access to distribution financing credits through the state banking system, then later by participating in divestiture programs and investing in their own marketing capacities.

A necessary component of any attempt to reform pricing and the mechanism for price determination will be a thorough recasting of the urban ration sales system.

Inputs Pricing and Distribution. The fertilizer distribution subsidies should be phased out (higher grain procurement prices will compensate), the linking of fertilizer distribution with compulsory grain procurement should be abolished, and China's brief experiment with liberalized fertilizer marketing during the mid-1980s should be reinstated. A similar effort should be initiated to improve the allocation of fertilizers, though unlike grains, the implementation of this kind of approach must accommodate the continuing shortage of high-analysis fertilizers in China and be implemented even more carefully to prevent a measured erosion of farmers' purchasing power. In addition to reinstating the trial liberalization referred to above (which mainly involved locally produced, low-analysis fertilizers manufactured in local fertilizer factories), the plan prices for the high-analysis centrally managed stocks and imports should be increased, and the regional allocation criteria simplified in a manner that would tend to make fertilizers more available to crops having high production *and income earning* potential. After geographic allocations have been made, perhaps the high-analysis but still administered fertilizers could be auctioned off to the farming population, which might achieve a kind of "second-best" efficiency. This would also augment revenues to cover current losses in the distribution system.

International Trade. Over the longer term, the real gains would come from a decentralization of the management of foreign trade and internal procurement and marketing of grains. China's parastatal corporations responsible for these operations are not efficient or able to respond quickly enough to changing circumstances. Moreover, they have not been able to restrain costs. In 1989, fully one-third of China's enormous grain subsidy was allocated to

offset the grain bureau's operating losses, while it is reported that the equivalent of at least \$350 million was allocated to finance grain import subsidies. Equally important, the agencies responsible for China's foreign trade in grains neither pass gains from exporting on to Chinese traders and producers nor do they respond readily to market signals and changes in China's internal grain situation. Thus, during 1984 (a peak year in domestic grain production), China imported over 12 million tons of grain, an almost four-fold increase over imports in 1983 (a previous year of record grain production). The "stop-go" behavior manifested by the agencies responsible for international trade and grain movements within China—largely in response to administrative orders—and the losses due to the predominance of state-owned monopolies in China's international and domestic marketing both inhibit the country's ability to exploit its advantage, respond quickly to changing configurations and trading positions in the world's grain markets, and pass the incentive signals with due alacrity to its producers and consumers.

FARMERS' PARTICIPATION IN POLICYMAKING

China's farmers lost an important voice at the senior policymaking level when China's State Council decided to abolish its rural advisory arm, known as the Research Center for Rural Development (RCRD). Since its founding in 1984, the Center had played a unique role in the process of deepening China's rural reforms and delineating modalities for successful implementation. Through its Development Institute, it commissioned a number of regular surveys and investigations in the rural area, and thus served as a prime vehicle for feedback from the farm to the center. Through its Experimental Programs Office, the RCRD provided technical assistance to local administrative units that were actively experimenting with modifications of existing policies. Principles developed in the more successful experiments were transformed into national policies in such key areas as agricultural pricing and marketing, and the rural land management system, improvements in the "business environment" for rural industrial enterprises and industrial extension services, the regulation of rural financial markets, and experiments in social forestry. During the past year, however, much of this work has come to a halt following the political uncertainties in respect to the future direction of rural reform.

There are recent encouraging signs that the atmosphere is again changing in favor of reform, and that information channels linking farmers to the State Council may be restored. In particular, the decision to abolish the RCRD has been partially rescinded. Though the organization no longer exists, the staff of its Development Institute is being transferred as a unit to another of the State Council's policy research arms, while the Experimental Programs Office has been attached more or less intact to the office of the Minister of Agriculture. Equally important, there are indications that some of the experimental reform programs will be resuscitated during the coming year.

ROLE OF THE INTERNATIONAL COMMUNITY

What can the international community do to facilitate the transition from plan to market? The experience of the World Bank, several individual countries, and the UN's specialized agencies in China suggests that a fairly vital role can be played. Central planning in China, as in other socialist agricultural systems, never proved a sufficiently flexible vehicle for stimulating technology transfer. Administered pricing and resource transfers denied to China the ability to

respond to and benefit from numerous income-earning and growth opportunities in agriculture. Since 1979, the international community has assisted the reforms in a number of ways, providing both purely technical advice (for example, on ways to establish, operate, and regulate decentralized commodity and financial markets, or to prepare agricultural investment projects that would stimulate technology transfer and productivity growth) and considerable financial assistance, which otherwise might not have been forthcoming for agricultural development in China.

The experience of the World Bank in adjustment lending for rural reform, is worth noting. During the process of designing the Bank's only adjustment loan to China (known as the "Rural Sector Adjustment Loan", or RSAL), a considerable boost in the pace of implementing China's experimental reform programs ensued, due in part to World Bank's advice and involvement. Though the proceeds of the loan were used by China to secure additional supplies of imported agricultural inputs, the portion of China's budget thereby liberated was mostly channeled to the experimental zones to help offset financial and social costs of reform. Since some of the experiments were being implemented by jurisdictions having up to three million residents, this was not an insignificant matter. Given China's still predominantly nonagricultural priorities, and the reluctance of most local governments to invest in agriculture, the financial wherewithal made available to these policy reform experiments was enlarged considerably.

REFERENCES

- Almanac. 1986. See Editorial Board of the Almanac of China's Foreign Economic Relations and Trade, below.
- Ash, Robert F. 1988. "The Evolution of Agricultural Policy." *China Quarterly* 116 (December), pp. 529-555.
- Burcroff, Richard, and Alan Piazza. 1990. "Grain Marketing, Price Policy, and Foreign Trade." Working Paper no. 7., World Bank China Department, Washington, D.C.
- China, Ministry of Agriculture, Planning Bureau. 1989. *Zhongguo Nongcun Jingji Tongji Ziliao Daquan, 1949-86*. Beijing: Agriculture Press.
- Crook, Frederick W. 1985. "The *Baogan Daohu* Incentive System: Translation and Analysis of Model Contract." *China Quarterly* 102 (June) pp. 291-305.
- Editorial Board of the Almanac of China's Foreign Economic Relations and Trade. 1987. *Almanac of China's Foreign Economic Relations and Trade, 1986*. Beijing: Zhongguo Zhanwang Press.
- Editorial Board of China Agricultural Yearbook. Annual Volumes 1981 to 1988. *Zhongguo Nongye Nianjin*. Beijing: Agriculture Press.

- Jiang, Yaping. 1988. "Wo men bu gou yao zhong di: beijing shumuxian yiqu chengbao tudi hetong jiufeng jishi." *Renmin Ribao* October 26.
- Johnson, D. Gale. 1989. *Economic vs. Noneconomic Factors in Chinese Rural Development*. Paper No. 89:13. Office of Agricultural Economics Research, University of Chicago, Chicago, IL.
- Kojima, Reetsu. 1988. "Agricultural Organization: New Forms, New Contradictions," *China Quarterly* 116 (December) pp. 706-735.
- Kueh, Yak-Yeow. 1984. "China's New Agricultural-Policy Program: Major Economic Consequences, 1979-83." *Journal of Comparative Economics* 8 (December), pp. 353-75.
- _____. 1985. "The Economics of the 'Second Land Reform' in China." *China Quarterly* 101 (March), pp. 122-31.
- Lin, Justin Yifu. 1987. "The Household Responsibility System Reform in China: A Peasant's Institutional Choice." *American Journal of Agricultural Economics* 69 (May), pp. 410-15.
- _____. 1988. "The Household Responsibility System in China's Agricultural Reform: A Theoretical and Empirical Study," *Economic Development and Cultural Change* 36 (April), pp. S199-S224.
- _____. 1989. "Rural Reforms and Agricultural Productivity Growth in China." Mimeograph. Beijing: The Development Institute, Research Center for Rural Development (RCRD).
- Luo Hanxian. 1985. *Economic Changes in Rural China*. Beijing: New World Press.
- McMillan, John, John Whalley, and Li Jing Zhu. 1989. "The Impact of China's Economic Reforms on Agricultural Productivity Growth." *Journal of Political Economy* 97(4), pp. 781-807.
- Shultz, Theodore. 1964. "Transforming Traditional Agriculture." New Haven: Yale University Press.
- Sicular, Terry. 1988. "Agricultural Planning and Pricing in the Post-Mao Period," *China Quarterly*, 116 (December), pp. 671-705.
- SSB (State Statistical Bureau). Annual volumes. *Zhongguo Tongji Nianjian*. Beijing: China Statistics Press.
- _____. 1987a. *Guominshouru Tongji Zilao Huibian*. Beijing: China Statistics Press.

_____. 1987b. Fixed Capital Investment Statistics Division *Zhongguo Guding Zichan Tongji Ziliao, 1950–85*. Beijing: China Statistics Press.

Wen, Guanzhong James. 1989. "The Current Land Tenure and its Impact on Long-Term Performance of Farming Sector: The Case of Modern China." Ph.D. dissertation, Department of Economics, University of Chicago, Chicago, Ill., 1989.

Zhongguo Nongye Nianjin. Annual volumes. See Editorial Board of China Agricultural Yearbook, above.

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