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Prospects and Policy for Central and East European Agriculture

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PROSPECTS AND POLICY FOR CENTRAL AND EAST EUROPEAN AGRICULTURE

by

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with

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Executive Summary:
Prospects and Policy for Central and East European Agriculture

Larry Karp and Spiro Stefanou

To provide different perspectives of Central and East European (CEE) agriculture we have assembled statistics on production, consumption and trade. These, together with a review of policies prior to liberalization, provide a background for a discussion of current policies and recommendations for a change in government emphasis. We also review attempts to estimate the effects on agriculture of recent and potential reforms.

Section I provides a statistical overview of agriculture which assesses the importance of that sector in CEE economies. Agriculture accounted for over 14% of GDP in Hungary and Poland in 1990, and 7% in Czechoslovakia; in each case this share declined between 1985 and 1990. In 1990 agricultural production employed over 20 percent of the labor force in Poland, and approximately 10 percent in Czechoslovakia and Hungary. In contrast, EC agriculture accounted for 6.5 percent of employment and between 2 - 4 percent of GDP in 1990. There is considerable variation in the structure of ownership within CEE. In Czechoslovakia and Hungary 96 and 85 percent, respectively, of the land was owned by cooperatives and state farms, whereas in Poland 76 percent of the land was privately owned before liberalization. Private farms tend to be too small, and state farms too large for efficient operation. Yields per hectare tend to be much lower in CEE than in the EC, although for some crops productivity in Hungary is close to EC levels. Pre-reform levels of consumption and per capita production of meat and dairy products were close to Western levels, but the consumers' budget share of food was more than twice the share in the West.

We discuss policy issues in section II. We explain why CEE governments have a tendency to adopt an interventionist agricultural policy which relies on protectionist commodity-specific programs, and give examples of where this is occurring. We recommend instead the adoption of a policy which is broadly neutral toward agriculture; sector-specific state support should be mediated by banks, in the form of subsidized collateral. There are a number of arguments in favour of an interventionist agricultural policy, which we review and criticize. The economic theory of piecemeal policy reform does not support the use of a sectoral policy. The desire to influence the composition of the agricultural labour force does not provide a basis for price support policies. There is evidence that agriculture is a shrinking sector in CEE, but adjustment costs do not provide an argument for sector-specific policies. Adoption of a trade policy that is neutral toward agriculture reduces the temptation to use a domestic agricultural policy. Western agricultural subsidies do not provide a rationale for an interventionist CEE agricultural policy, and neither do the objective of accession to the EC, or the loss of CMEA markets. The mixed motives of donors and recipients of food aid increase the danger that this aid harms the recipients' domestic agriculture. Humanitarian objectives need to be distinguished from the donors' desire to increase market share, and the recipients' desire to discipline domestic producers.

Statistics on trade flows are discussed in Section III. Agriculture constitutes over a fifth of Hungarian exports, and a twentieth of Czechoslovakian exports. During the 1980s

CEE became increasingly reliant on Western agricultural markets. CEE had a large market share of (former) USSR (FSU) imports of eggs, fruit and vegetables, but its market share for grain, the FSU's largest import, declined during the 1980's. The importance of Western markets increased over that period. The similarity between the composition of exports to the market economies and to CMEA countries was greater than was the case for general exports. This suggests that if Western markets accept increased agricultural imports, the CEE agricultural sector may find it easier than the manufacturing sector to reorient exports to the West.

Data on Producer and Consumer Subsidy Equivalents (PSE's and CSE's) is discussed in Section IV. In comparison to Western producers, the agricultural sector in the East received a moderate level of support. Support for certain commodities, however, such as Hungarian beef and veal, was as high as in the EC. The types of subsidies that were used provided incentives for inefficient production since they favoured high cost producers and removed penalties for low quality. Despite consumer subsidies that allowed them to pay less than production costs, consumers' inability to trade at world prices resulted in a net tax, comparable to the level in the US and the EC.

The privatization of state farms and collectives is reviewed in section V. In addition to the organizational problems, the major impediment to this process is the weak financial position of most farms and processing enterprises. The restitution claims of previous owners and their heirs also delay the process in Hungary and Czechoslovakia; restitution is less important in Poland, where collectivization and state expropriation was less extensive. Hungary is attempting to restructure agricultural assets and sell them for a fair market value. Prior to the velvet divorce, Czechoslovakia intended to privatize more quickly, using a voucher method. A similar method has been discussed but not implemented in Poland.

Attempts to estimate the quantitative effects of reform, ranging from simple calculations of output increases obtained by reducing waste, to multi-commodity, multi-country models, are reviewed in Section VI. If even a fraction of the potential for reforms in the FSU are realized, the effect on international agricultural trade is likely to swamp the effect of reform in CEE. The West will be unable to insulate itself from the effect of reform in the FSU; significant adjustments in Western agriculture will be needed. In view of this, the ability to insulate Western markets from the effect of CEE reform, is of diminished value to Western agriculture. However, the costs to CEE agriculture of such protection would be large; as a consequence, the indirect political and economic cost to the West would also be large. The quantitative models imply that CEE agriculture is likely to benefit more from liberalization in the EC than in North America, a view which is consistent with the greater level of protection in the EC and the greater importance of EC markets. The Association Agreements between the EE-3 and the EC appear unlikely to provide major benefits for CEE agriculture.

Prospects and Policy for Central and East European Agriculture

Introduction

The socialist legacy in Central and East European (CEE) agriculture includes: financial crisis; enterprises with inappropriate scale and technology; poorly defined property rights and the attendant inefficiency of decision-making; and reliance on the state rather than the market. The liberalization process has added new difficulties by disrupting old intra- and international trading relations. The optimism that greeted the initial stage of reform has been replaced by a realization of the cost of transformation. The problems in agriculture, and the policy environment needed to improve them, are shared by other sectors. In an attempt to contribute to the understanding of specific issues that confront the agricultural sectors of CEE, this paper describes current conditions and prospects and suggests an appropriate role for government involvement. Most of the discussion concerns Poland, (the former) Czechoslovakia, and Hungary (EE-3), although similar issues arise in other economies in transition.

In order to provide several perspectives of CEE agriculture, and at the same time to present a sketch which is coherent and easily accessible, we have assembled information from a variety of sources. This includes statistics on production, consumption, and trade. We discuss government policies immediately prior to liberalization, and current policies. There have been a number of recent attempts to estimate the effects of reform, which we also review. This information is the basis for our recommendations. The paper is organized in six sections; we have attempted to make these self-contained, since the material in certain parts will be familiar to some readers. Tables are located at the end of the relevant section.

We begin in section I with a statistical overview of CEE agriculture. A basic question here concerns the importance of the sector prior to liberalization. On the production side this can be measured by agriculture's contribution to GDP and its share of the labour force, and on the consumption side it can be measured by the consumers' budget share for food. By all these measures, agriculture is more important in CEE than in Western Europe. Considering the difference in income levels between the two regions, this is expected. Per capita production and consumption of basic food items approaches Western European levels. However, productivity is much lower in CEE.

We discuss policy issues in section II. There is a strong temptation in CEE to adopt an interventionist agricultural policy which attempts to achieve commodity-specific targets. This tendency stems from habits of behaviour created under socialism, the example of the West, and the belief that the alternative to an interventionist policy is laizze faire which would lead to the destruction of domestic agriculture. We think it would be unfortunate if policy-makers succumb to this temptation; instead, policy should be broadly neutral to agriculture. In particular, this means avoiding commodity-specific tariffs or subsidies. To the limited extent that government budget constraints admit support for the sector, this should be given by underwriting collateral for bank loans and not for commodity programs.

There are three parts to our argument. First, commodity programs are bad policy because: they encourage unproductive lobbying which leads to greater demands on the treasury; a given level of state support creates unnecessary distortions; and the programs become capitalized into land values and are ineffective in supporting general prosperity in agriculture. Second, the benefits of a "collateral subsidy" are that it: encourages the development of the banking sector, which in the long run assists agriculture; this subsidy has useful insurance properties; and it largely avoids the disadvantages of commodity programs. The third part to the argument consists of a rebuttal of many of the reasons that have been advanced to support the use of commodity programs within CEE. These include: the assertion that producers need assistance because they face monopsonistic processors; the West supports its agriculture, and CEE should follow suit in order to obtain a level playing field or to prepare for integration into the EC; and there are adjustment costs and market failures that can be remedied by government intervention. Section II gives examples of current CEE policy which show there is real danger that a Western-style agricultural policy will be adopted.

The importance of agriculture in trade and of different markets for agricultural trade, are reviewed in section III. There is considerable variation across the CEE in this regard. For example, agriculture constitutes over a fifth of Hungarian exports, and a twentieth of Czechoslovakian exports. During the 1980s CEE became increasingly reliant on Western agricultural markets. CEE had a large market share of some (former) USSR (FSU) imports; however, its market share for grain, the most important import, declined during the 1980s. We provide new evidence that the composition of CEE agricultural exports to the market economies and to CMEA countries were more similar than was the case for general exports. This would tend to make it relatively easier for agriculture to adjust to the loss of markets in the East. Opposing this tendency is the fact that agricultural markets in the West are more highly protected than other commodity markets.

Data on subsidies in agriculture prior to liberalization shows the level of state support to the sector, and indicates the scope for reform. We discuss the problems with the most useful summary statistic, the producer and consumer subsidy equivalents, and then present and comment on the data in section IV. The meat and dairy sectors in CEE were generally supported and in some cases the grain sector was taxed. The aggregate level of state support to producers was between the level in the EC and the US. Although consumers received direct subsidies, these failed to compensate for the inability to buy goods at world prices. The net effect was to tax consumers. Most discussions of CEE food consumption under socialism claim that consumers were subsidized. The conflicting conclusions may be due to data problems (e.g., use of the wrong exchange rate) but could also simply indicate that consumers would have been better off paying world prices for imports rather than an amount less than production costs for domestic goods.

A critical aspect of current agricultural policy concerns the privatization of state farms and collectives, reviewed in section V. Hungary is attempting to restructure agricultural assets and sell them for a fair market value. Prior to the velvet divorce, Czechoslovakia

intended to privatize quickly, using a voucher method. In both countries the issue of restitution for former owners and their heirs is slowing the process. Restitution is less important in Poland, and the private agricultural sector is much larger there. In all these countries the insolvency of farms is a greater impediment than the problem of restitution.

There have been a number of attempts to estimate the quantitative effects of reform, ranging from simple calculations of output increases obtained by reducing waste, to multi-commodity, multi-country models. The review of these in section VI does not lead to a consensus on narrow issues, but important general points emerge. The first is that if the FSU is able to achieve even a fraction of the potential gains from reform, the effect on international agricultural trade will be large, and will swamp the effect of reform in CEE. Since the FSU has been a large net importer, successful reforms would enable it to make unilateral changes simply by limiting imports. The CEE, on the other hand, has had a small trade surplus, and the success of reform requires that it be able to increase its exports. Assuming that there will be some success in agricultural reform both in FSU and CEE, Western agricultural sectors will have no choice but to adjust. Protective policies will enable them to avoid the pressures for adjustment caused by CEE reform, but the resulting cost to the CEE would be great. Since the West cannot escape the pressures caused by success in FSU, the West has little to lose and a great deal to gain by accommodating imports from CEE.

The models also suggest that reform of EC policies is more important to CEE agriculture than is reform of North American policies. This conclusion seems plausible, since the EC is a more important market for CEE's exports, and the EC agricultural policy is very restrictive. The Association Agreements between the EE-3 and the EC appear unlikely to provide major benefits for CEE agriculture.

I. An Overview of Agricultural Production and Consumption

In order to place CEE agriculture in context, this section presents an overview of production and consumption. Relative to West Europe[2], agriculture is an important sector in the national economies, but its share in GDP and in the labour force was declining even before liberalization. There exist a variety of forms of farm ownership across CEE, and these are correlated with size: private farms tend to be too small, and state and collective farms too large to be run efficiently. Output per hectare is low relative to West Europe, and varies widely across CEE. The per capita production and consumption levels of major food items in CEE approach and in some cases exceed Western levels. Consumers' budget share for food is very high relative to Western levels.

There is considerable variation in the structure of ownership within CEE. In Czechoslovakia and Hungary 96 and 85 percent of the land was owned by cooperatives and state farms, whereas in Poland 76 percent was privately owned before liberalization (Table I.1). State (or collective) farms accounted for all land in the former Soviet Union (FSU); state farms accounted for only 30, 15 and 21 percent of the land in Czechoslovakia, Hungary, and Poland, respectively. The average private farm in Poland, at less than 6 hectares, is unable to take advantage of economies of scale. The state and collective farms across CEE are generally regarded as too large to be run efficiently.

Although still important, there is evidence that the agricultural sector was declining even before liberalization. Agriculture accounted for over 14 percent of GDP in Hungary and Poland in 1990, and 7 percent in Czechoslovakia (Table I.2). Between 1985 and 1990 this share declined for Bulgaria, Hungary, Poland, and Czechoslovakia. In 1990 agricultural production employed over 20 percent of the labor force in Poland, and approximately 10 percent in Czechoslovakia, Hungary and Poland.[3] In the latter three countries this share declined since 1985. By contrast, in EC agriculture accounts for 6.5 percent of employment and between 2 - 4 percent of GDP in 1990 (FAO; World Bank 1992a). This comparison is consistent with a general tendency for the importance of agriculture to decrease as national income grows.

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[2] Reference to West Europe is made only as a convenient basis for comparison. We are not implying that West European agriculture represents a standard against which CEE agriculture should be measured.

[3] FAO statistics on agricultural employment tend to be lower than data reported elsewhere. National statistical services show Poland and Czechoslovakia's agricultural labor force as high as 28 and 15 percent, respectively. However, many workers on agricultural cooperatives and state farms are employed in services supporting the agricultural community (e.g., school teachers, social services) rather than production work. The re-classification of many positions from agricultural to non-agricultural employment in 1990 contributed to the dramatic decline in the Polish state agricultural workforce.

Output per hectare varies across CEE but is generally much lower than EC levels (Table I.3) Hungarian productivity, the highest in CEE, is at 87 percent of the West German level for potatoes, 90 percent for grains, and 95 percent for milk. Grain yields in Poland and Ukraine are approximately half the German levels; yields in Czechoslovakia reach 80 percent of the German levels. Potato yields range from Bulgaria's 32 percent to the Hungarian level.

The policies of the past regimes in CEE encouraged large supplies of meat and milk. Per capita quantities of milk and meat production are near levels in Western Europe (Table I.4). The post-reform reduction in livestock inventories (Table I.5) suggests that at least in the short run these levels will fall.

The quantity, if not the quality of food consumption in CEE, was close to that of much richer economies, but consumers spent a large proportion of their income on food. Meat consumption at the time of the transition in CEE rivaled or exceeded the Western European levels (Table I.6). Following liberalization, the consumer budget shares for food increased from under 40 percent to over 50 percent in Czechoslovakia and Poland; in contrast, the budget share for food in Eastern Germany dropped by nearly 10 percent in the first year of price liberalization (Table I.7). In Western Europe, the consumers' budget share for food is approximately 20 percent (Hallberg, 1992).

TABLE I.1
AGRICULTURAL LAND HOLDINGS IN CEE IN 1990

	Percent of Total Land			Average Farm Size (in. ha)		
	Cooperatives	State Farms	Private	Cooperatives	State Farm	Private
Czechoslovakia	66	30	4	2597	6162	n.a.
Hungary	70	15	15	4302	9361	0.87
Poland	4	21	76	290	3300	5.6

Note: Average land size in Czechoslovak cooperative and state farms is reported for 1987.
Sources: Csaki and Varga, 1992; Karp and Stefanou, 1992; Kabat (1992).

TABLE I.2
IMPORTANCE OF AGRICULTURE TO NATIONAL ECONOMY

	1985	1986	1987	1988	1989	1990
	(Agriculture as Percent of GDP)					
Bulgaria	12.9	15.0	12.2	11.7	11.2	10.8
Czechoslovakia	7.5	7.5	7.1	6.9	7.1	6.8
Hungary	18.6	19.0	17.7	15.1	15.0	14.3
Poland	14.6	14.7	13.5	13.2	13.2	14.7
	(Percent of Labor Force in Agricultural Production)					
Bulgaria	14.9	14.0	13.4	13.2	12.6	12.2
Czechoslovakia	11.1	10.6	10.2	10.0	9.7	9.3
Hungary	14.5	13.8	13.3	12.7	12.1	11.5
Poland	24.4	23.7	22.9	22.2	21.5	20.8

Source: FAO Production Yearbook, Various Issues.

TABLE I.3
AGRICULTURAL PRODUCTION AND PRODUCTIVITY, 1991

Country	Total Grain		Potato		Sugar Beet		Milk	
	Production (000 m.t.)	Yield/Ha	Production (000 m.t.)	Yield/ha	Production (000 m.t.)	Yield/ha	Production (000 m.t.)	Yield/Cow (kg)
Bulgaria	9020	38	503	118	868	238	2062	3592
Czechoslovakia	11857	49	2919	174	5857	349	5651	3677
Hungary	15376	55	1225	255	5750	357	n.a.	4919*
Poland	27811	32	29038	168	11879	329	n.a.	3200
Ukraine	38674	27	14550	95	36300	234	22675	2744
France	60416	65	5373	317	29280	640	23762	4783
Germany	39270	60	9856	293	25907	461	29300	5172
Switzerland	1281	62	634	350	897	628	3057	3845

Sources: UN, ECE, Agricultural Review for Europe No. 34, Volumes I and V, 1992.

TABLE I.4
MILK AND MEAT PRODUCTION PER CAPITA

Country	1990 Milk Production Per Capita (kg)	1990 Meat Production Per Capita (kg)
Bulgaria	231.7	71.9
Czechoslovakia	359.9	98.5
Hungary	276.7	116.3
Poland	422.4	69.3
Switzerland	443.0	68.7
Ukraine	436.0	n.a.
France	417.6	97.9
Germany	363.5	83.5
Eastern Europe	338.9	77.2
European Community	346.3	89.7
FSU	376.7	61.6

Sources: UN, ECE, Agricultural Review for Europe, No. 34, Vols. I, IV, V, 1992.

TABLE I.5
CHANGE IN LIVESTOCK INVENTORIES (in percent)

Country	Cattle & Calves		Dairy Cows		Pigs		Sheep	
	1989/90	1990/91	1989/90	1990/91	1989/90	1990/91	1989/90	1990/91
Bulgaria	98	90	98	96	105	75	94	98
Czechoslovakia	96	88	97	88	95	99	98	85
Hungary	98	90	98	92	104	75	90	100
Poland	94	88	98	93	103	112	94	78
Ukraine	n.a.	96	n.a.	99	n.a.	92	n.a.	92
France	106	98	93	94	96	100	103	98
Germany	99	88	95	89	100	85	103	109
Switzerland	100	99	99	100	96	96	106	104

Sources: UN, ECE, Agricultural Review for Europe No. 34, Volumes I, IV, V, 1992

TABLE I.6
CONSUMPTION OF MEAT PER HEAD IN EUROPE (kg)

Country	1989	1990
Bulgaria	70.3	63.3
Czechoslovakia	89.1	87.4
Hungary	79.2	69.4
Poland	61.0	56.5
Romania	44.7	59.1
USSR	65.4	65.8
EC - Average	80.3	82.3
Austria	81.4	81.3
Switzerland	78.9	78.7

Note: Sum of beef, veal, pork, poultry, sheep consumption.
Sources: UN, ECE, Agricultural Review of Europe, No. 34, Vol. IV, tables V, XX, XXXV, XLIX, 1992.

TABLE I.7
BUDGET SHARE OF FOOD (in Percent)

	Before Transition	First Year of Transition
Czechoslovakia	35	52
Hungary	27	n.a
Poland	39	55-65
E. Germany	39	30

Sources: Czech Ministry of Agriculture; Csaki and Varga; Poland-World Bank-EC; Monthly Statistical Bulletin (Poland); Tangerman.

II. Policy Issues

After two generations of state control, CEE agriculture has been liberated to face world markets which are subject to massive governmental interference. This section describes features of current agricultural policy in CEE and suggests alternative responses. Government policy will certainly continue to affect the agricultural sector, but it is debatable whether there should be an *agricultural policy*, which we define as a system of taxes, subsidies, and quotas designed to achieve specific policy objectives within the agricultural sector (e.g. certain levels of production, consumption, or trade). That is, we associate an agricultural policy with an attempt to fine-tune, or even to manage broadly, the agricultural sector. We distinguish this from the manifestations, within that sector, of general attempts to promote reform and achieve growth.

There are two types of reasons to favour adoption of a (sector-specific) agricultural policy. First, if there are problems peculiar to agriculture, an agricultural policy makes it possible to address these in a systematic and flexible manner. Second, the governments of CEE's trading partners distort their agricultural sectors. On the basis of fairness and common sense, perhaps the CEE should follow suit. Neither of these arguments is compelling. Despite their severity, the problems within CEE agriculture are not qualitatively or quantitatively different than those in other sectors. The general economic policies needed for all sectors include: privatization, demonopolisation, removal of subsidies, open trade, and restructuring or elimination of old debt. Regarding the second reason, CEE countries are not in a position to alter agricultural policies in OECD nations; imitation of those policies is the wrong response. This leads to a recommendation that CEE governments avoid creating, or endeavour to dismantle, a sector-specific agricultural policy. Economic policy should be neutral toward agriculture, except for specific and limited goals which we describe below. Since there is evidence that an ad hoc and distortionary policy is being created and entrenched in CEE, it is worth spelling out the importance to agriculture of an alternative approach.

Our main points are:

- Due to political reasons, adopting a sectoral policy encourages higher levels of distortions.
- The economic theory of piecemeal policy reform does not support the use of a sectoral policy.
- Price subsidy programs are ineffective in influencing the composition of the agricultural labour force.
- State funds that are available to support agriculture should be mediated by the banking sector.
- These funds should be used to provide partial guarantees for short and medium term private debt, not for land purchases.
- Adoption of a trade policy that is neutral toward agriculture reduces the temptation to use a domestic agricultural policy.
- Western agricultural subsidies do not provide a rationale for a CEE agricultural policy.
- The mixed motives of donors and recipients of food aid increase the danger that this aid harms the recipients' domestic agriculture.

• The goal of accession to the EC is a poor argument for the use of an agricultural policy in CEE.
• There is evidence that agriculture is a shrinking sector in CEE, but adjustment costs do not provide an argument for sector-specific policies.

1. General arguments for policy neutrality

The economic arguments in favour of addressing problems in agriculture by means of a sector-specific set of policies are unconvincing. We discuss these below. The political arguments against such an approach are persuasive. Producers are encouraged to lobby for tariffs, subsidies, or other measures which affect individual commodities, if the political climate tolerates these policies. The incentives to attempt to increase protection of a single commodity are much reduced when this requires an increase in the general level of protection. This requirement makes the free-rider problem more severe. Individual producers still benefit from protection whether or not they contribute to the lobbying effort, but withholding their contribution is less likely to affect the success of the effort. In addition, the interests arrayed against a general increase in protection are likely to be more powerful than those that oppose the protection of a single commodity. For both of these reasons, a policy environment that treats different sectors neutrally is likely to generate less political pressure for distortions.

The adoption of sector-specific policies spawns a group of officials who are interested in their perpetuation. Since old policies seldom die but are simply buried under new policies, regulations become ever more complex; the undesirable consequences of old policies create arguments for the adoption of new ones. Understanding these well enough to execute them requires specialized knowledge, obtained by costly investment. The value of this human capital would be wiped out if transparent policies were adopted. There is a natural allegiance between producers in a sector and the public servants who oversee sectoral policies, and their interests are not always compatible with those of the general public.

The political basis for the objection to sectoral policies is that their adoption increases the general level of protection, and does so using complex and arbitrary schemes. However, commitment to uniform policies has the obvious cost of decreasing flexibility. It is necessary to decide how important this flexibility is likely to be for CEE agriculture.

If the major distortions in an economy are policy-induced (e.g., caused by tariffs or subsidies), there is a presumption that harmonization, which represents the movement away from sectoral policies, improves efficiency. If all policies are tariffs and goods are net substitutes in production and consumption, then greater uniformity, obtained either by increasing the lowest or decreasing the highest tariff, leads to an increase in welfare. Since it is usually politically easier to increase rather than decrease a tariff, a reform that increases efficiency may lead to a higher level of general protection. A movement toward a more uniform tariff structure is not necessarily welfare improving if some goods are not net substitutes or if policies other than tariffs (e.g. commodity-specific subsidies) are used. However, in such cases there are no general results for the design of welfare improving policy reform. Certainly there is no presumption that lack of uniformity is beneficial. Therefore, the simple case where the important distortions are policy-induced provides no support for the

adoption of sectoral policies. We have to turn to other types of distortions to look for such support.

CEE agriculture under socialism was explicitly subsidized, but the agricultural sector was disadvantaged in many important ways: it confronted monopolized and inefficient processors-distributors; it received low quality inputs; and producers had little training in how to make decisions in a market environment. The explicit subsidies could be, and in many cases were, eliminated with the stroke of a pen. With flexible prices, the terms of trade turned against agriculture rapidly. For example, a ratio of indices of (output) prices received by farmers and (input) prices paid by farmers fell from 112 in 1988 to 76 in 1991 in Poland (Wos, private communication).

It is widely reported that liberalization also left producers more vulnerable to monopsonistic processors, who were no longer constrained by the state to fixed wholesale price mark-ups and profitability levels. There is some statistical evidence for this view. In the first half of 1991, following liberalization in January, profits in the Czechoslovak food processing sector increased by 245 percent over the previous year. During the same period agricultural producers experienced losses (Slovak Ministry of Agriculture and Nutrition, 1992). A year after the January 1990 liberalization in Poland, the ratio of retail/procurement price had actually fallen for most commodities; however, by the end of 1991 they exceeded the 1990 levels. This suggests that retailers increased their markup, although not immediately. Table II.1., reproduced from Kwiecinski (1992), compares Polish and West German retail/procurement price ratios. For most commodities, the markups in Poland were significantly higher than in Germany. This, together with the presumption that there is less value added in the Polish processing sector, is additional evidence of monopsony power.

Processors' market power and other features which place the production sector at a disadvantage could not be altered by government fiat. Activities which may be viable in the long run, as these problems are corrected, are not profitable in the short-run. This provides a rationale, similar to the infant industry argument, for short term protection of the sector. Of course, the same types of problems plague other sectors of the economy in which the state played a leading role, so it is not clear that agriculture has a greater claim on public resources. Demonopolisation is certainly an important objective, in the agricultural processing sector as elsewhere. Producer price support policies are more likely to retard than to advance this goal, since state support for a sector which is exploited by downstream monopsonists may be largely captured by the monopsonist.

Proponents of adjustment assistance may believe that liberalization has led to a widespread and excessive exodus of resources, or that the process encourages the wrong people to leave the sector. In a later subsection we discuss the policy prescription for the first case where the exodus is unselective. Here we consider the second situation, which may be appear to describe Poland. There a large number of small, private, subsistence farms co-existed with large state farms which purchased inputs and relied on off-farm sales. By virtue of their lower degree of self-sufficiency, the state farms are more vulnerable to market reforms which cause a deterioration of their terms of trade. These are also the farms that are more likely to adopt modern technology and an appropriate scale of production. It appears

that the individuals and organizations that should be encouraged to remain in the sector are the most likely to be driven from it.

Even if this conjecture is correct, a policy that affects all producers in a sub-sector (such as a producer subsidy for milk) is the wrong response. Such a policy is likely to be too expensive, either in terms of government revenue or cost to consumers, to undertake on a scale large enough to keep the most vulnerable (and by assumption those with the most potential) in the sector. The primary effect of a more modest subsidy is to entrench the position of the small and inefficient producers. Also, it may be socially desirable for the most efficient farmers to leave the sector. The opportunity cost of the small proprietors remaining in agriculture is probably very low. They may have a comparative advantage in agriculture, relative to the more efficient producers even though the latter have an absolute advantage. Finally, it is not clear that the conjectured response of producers is actually occurring. In general, there has not been the sharp drop in production that would be associated with a departure of the most efficient producers. For a particular example, the changing size distribution of Polish dairy and pork producers appears to involve a decrease in the shares of both the largest and smallest units (Karp and Stefanou, 1993).

2. Agricultural assistance via banking

The view that recent reform puts at greatest risk the most efficient units in agricultural underscores the need for modernization of the banking sector. In common with enterprises throughout the economy, state farms in CEE inherited debt which bears little relation to their economic potential. This debt reflects a sunk cost; the cost of servicing the debt should not enter calculations of the economic viability of an enterprise. The uncertainty of whether, or to what extent, the debt will be forgiven, also makes enterprises less attractive to buyers and hinders the process of privatization. The resolution of this issue, which in many cases will require banks to write off debt, will weaken banks and lead to heavy demands on the state treasury. These needs should have priority over price support measures. There is nothing peculiar to the agricultural sector.

In Western countries agriculture relies more heavily on debt than equity financing, possibly because moral hazard and adverse selection problems tend to be severe in that sector. This suggests that agriculture is among the sectors more seriously disadvantaged by the embryonic stage of the CEE banking sector. Reforms needed to develop banking are occurring. An example of this is the reform of Polish collateral law (IRIS Update 1992). Under previous law, inventory which in the normal course of events was sold, could not be used for collateral. The reform makes it possible to use stocks (e.g. grain) as collateral, and also clarifies and strengthens the creditor's right to seize collateral in the event of non-payment. Reforms of this sort are a prerequisite of an efficient credit market.

Where state resources are available to support the agricultural sector, these should be distributed through banks rather than direct price subsidies. In the 1993 Polish agricultural budget, however, the amount allocated to "servicing agricultural credits" is approximately equal to the amount spent of fuel subsidies, about a quarter of the total budget (Agra Europe, 1993).

Price supports reduce credit risks, but they are an indirect and expensive means of promoting agricultural banking. Subsidizing producers via the banking sector fosters an institution that is necessary to the long run health of agriculture. This form of subsidy does not distort the relative costs of purchased inputs and consequently leads to more efficient production. It also makes it more likely that state aid will be targeted to relatively efficient producers, since the banks care about the probability of repayment of loans. Where producers are heterogenous, with some largely self-sufficient and others reliant on market transactions (e.g. Poland), the latter group will be better placed to apply for loans.

Agricultural support that is offered in the form of a credit subsidy should be for financing operating costs or new investment, rather than for the purchase of land. We return to this point below. The question remains whether such aid should come in the form of an interest rate subsidy or a collateral subsidy (by which we mean that a government guarantee provides a partial substitute for a borrower's collateral). Either form of intervention affects both the equilibrium interest rate and collateral requirement that farmers face, since these are jointly determined. In special cases, the two policy instruments are equivalent. For example, suppose that: (i) the government has a fixed budget which it will allocate either to collateral or interest rate subsidies; (ii) banks are competitive; (iii) the pool of borrowers is fixed; and, (iv) the probability of default is also fixed. (The latter circumstance arises if default occurs only in extreme circumstances, and the subsidy is not large enough to alter the set of such circumstances.) Under these four circumstances, the equilibrium contract (the interest rate and collateral requirement farmers face) does not depend on which form of subsidy the government adopts, so the effects of the two policies are the same.

Under more plausible circumstances, the effects of the policies will differ. It seems likely that an interest rate subsidy, for example, would have a greater effect on the equilibrium interest rate than would a collateral subsidy which carries the same expected cost to the government treasury. If this assumption is accepted, it provides a basis for comparing the two types of policies. The interest rate subsidy is more common; it has been widely used in developing countries. However, for several reasons we think that a collateral subsidy is the better option. The interest rate subsidy is more likely to foster dependency on cheap credit. The difficulty of obtaining any credit seems a more acute problem than the high cost of credit, and a collateral subsidy provides a more direct way to deal with this. It is efficient that producers pay (approximately) the social cost of capital at least in some states of nature; however, in view of the absence of private insurance markets, it may be desirable to insure them through social policy in bad states of nature (a fall in prices or poor harvest). These two considerations imply that the interest rate farmers face should be close to the competitive rate, but that credit should be possible to obtain and default should not lead to ruin. This suggests using collateral subsidies, which provide a substitute for insurance.

Collateral subsidies have important similarities with, but are superior to, a more common method of providing insurance: government supported price floors. That policy offers insurance against price but not output risk, and thus provides limited protection against income risk. Also, minimum price programs are commodity specific; collateral subsidies, on the other hand, provide implicit insurance for whatever activity (crop or livestock) the farmer undertakes, and therefore have less tendency to distort the choice of activity. Minimum price programs often cover all producers and do not set limits on quantity. This lack of selectivity

makes the programs a very expensive way to provide insurance. In situations where the price floor is set so high that it binds in almost all states of nature (as in most CAP programs), the policy no longer has much in common with collateral subsidies. (In these situations, policies such as the "co-responsibility levy" are adopted to limit costs.)

The US "loan rate" program allows producers to pledge a certain quantity of their harvest as collateral for a loan. The producer is forgiven the loan and forfeits his collateral if its value at harvest is less than the loan. "Set aside" requirements (obligations to idle a certain amount of land) limit the quantity that can be borrowed in this manner. By fixing the loan rate, the government sets a price floor, and by choosing the set aside requirement the government affects the quantity that is protected by the floor. If the loan rate is higher than the expected price, the government effectively values the collateral more highly than the market, and the program resembles a collateral subsidy. However, there are the important differences already mentioned. As a minimum price policy, the loan rate program provides price rather than income insurance, it is crop specific and therefore distorts the choice of activities, and it does not discriminate across individuals on the basis of efficiency.

In addition, there are political and institutional reasons for thinking that collateral subsidies are preferable to price floors. The latter require direct and obvious government involvement. Collateral subsidies use banks to mediate government intervention. In the process of supporting agriculture, collateral subsidies also promote the growth of banking, a sector that is crucial to agriculture. The absence of direct government-producer interaction, and the lack of identification with specific commodities, means that collateral subsidies should have a smaller tendency to generate powerful interest groups. A phased reduction of the total subsidy to agricultural banks may be simpler to achieve than the piecemeal reform of many commodity-specific policies.

One of the drawbacks of agricultural programs is that they become capitalized in land values. The expectation that current support programs will continue, increases the price of agricultural assets, chiefly land. This increase in wealth of current landowners is realized when the land is sold. The additional farm revenue resulting from the agricultural programs is paid to the new owner, but this largely compensates for the higher operating costs due to the higher debt needed to pay for the more expensive land. The programs are not an efficient way to increase net income. The agricultural program which is intended to bolster farm income is transformed into a windfall for the original owner. Subsequent owners have (to some extent) already paid for the continuation of the programs, although they have not, of course, paid those who bear the cost of the programs: the taxpayer and consumer. This implicit "prepayment" makes farmers feel justified in demanding the continuation of the programs; banks, who hold the debt, support them. The government can abandon a policy that is largely unsuccessful in raising net farm income, and risk a financial crisis. It can continue or increase the level of support, allowing current owners to remain solvent or receive capital gains, but exacerbating the problem for the next generation of farmers and policy-makers. Finally, it can buy off current owners by exchanging lump sum transfers for price policies.

The problem of capitalization of benefits plagues farm programs in the EC, the US, and Japan. CEE has the opportunity to avoid this outcome by rejecting the type of

agricultural policy found in those countries. Now is the right time to adopt this approach, since reform will probably be more difficult in the future. A critical stage of CEE agricultural transformation is privatization, which is complicated by the uncertain policy environment (Section V). Land markets are thin, and there is great uncertainty about the value of land. In Poland, for example, the real price of land of former state farms fell by nearly 50 per cent in 1992, and less than 10 per cent of the amount offered for sale was sold (Agra Europe 1993). It is important that land prices reflect individuals' expectations about the productivity of land, and the value of output in world markets; land prices should not reflect producer optimism about government support. Given the state of world agricultural markets, this means that land prices would be low in comparison to similar land in the West.

Low land values are unattractive to those with claims on the land: the state, workers and managers in agricultural enterprises who are eligible to obtains shares at a discount, and those with restitution claims. The latter two groups of claimants have no basis for expecting the state to increase the value of their assets. Increased state revenue from land sales in which prices are inflated by the expectation of future government largesse, merely represents an extremely inefficient way of public borrowing.

The willingness to let land prices settle at a low level raises two policy problems. The first, already alluded to, is that it weakens the balance books of banks which hold these assets as collateral. However, this is part of the general reorganization required of banks, a process which will involve writing-off much old debt. If collateral subsidies were offered for debt used to acquire land, this would be a means of subsidizing land prices, and therefore would provide a transfer to current owners. Since scarce public revenue should not be devoted to this goal, we recommended that credit subsidies be for short and medium term debt, i.e. to cover operating costs and new investment rather than the purchase of land.

The second policy problem is that low land prices increase the attraction of speculative purchases for Western buyers. Although the economic argument for impeding such purchases is ambiguous, this seems to be a case where political considerations should be paramount. The amount of foreign revenue that could be generated from land sales is probably small, but the political cost of appearing to sell the nation's birthright for a pittance would be substantial. Moreover, if such purchases are mainly for speculative reasons, there is a greater chance that the land would be left idle. In this case, the sales would decrease agricultural employment and investment. The same considerations do not apply to industrial assets, which include the agricultural processing and distribution industries. Possibilities for speculative gains also exists with industrial assets, but because of their rapid depreciation when unused, such purchases are made with the intention of additional investment and continued operation. Investors do not buy factories with the intention of closing them down for ten years until the market improves. Therefore, restrictions on foreign land purchases are sensible.

To summarize, our main point is that CEE should avoid an agricultural policy that relies on a web of subsidies and quantity restrictions. In so far as government budget constraints are consistent with aid to agriculture, it should be given through the banking sector. This method of transfer avoids some of the greatest drawbacks of agricultural policy, preserves many of the useful effects of such policy, and promotes the growth of a sector vital to agriculture. In situations where interest rate and collateral subsidies are not equivalent, we

have explained why collateral subsidies appear preferable. Such subsidies should be concentrated on short and medium term debt, so that they have the characteristic of income support programs and investment subsidies, rather than long term debt, where they would support land prices. There is, of course, the danger that the expectation of such subsidies in the future would be capitalized into land prices. However, this form of government support is mediated by a neutral institution whose interest is served by efficient allocation of the aid. It is not tied to specific commodities, so it discourages the formation of producer groups; and it would be available only after satisfaction of standard criteria for loans, rather than as a matter of right. These features give the program the character of a temporary measure; they enhance flexibility, making it easier to change the amount of aid or the criteria for receiving it. Consequently there is a smaller likelihood of the program having the perverse effects which have resulted from agricultural policy in many Western countries.

The logistical problems stemming from the early stage of development of CEE banking constitute a possible objection to this proposal. That argument would be more persuasive if the government's objective was to transfer a large amount of resources to the agricultural sector. In that case a weak banking sector would be a bottleneck, and the clumsier but quicker method of price support policies and subsidies might be defensible. However, this is not the situation. CEE governments are not in a position to make large transfers to agriculture. Since the transfers will necessarily be small, they must be made carefully and with a view to the long term. Also, the logistical problems can be overstated. Initially, the loan application can be made very rudimentary without completely eliminating its role as a screening device. Any form of government intervention requires administrative costs, which might as well take the form of training future bankers rather than government officials.

3. Trade and Aid

Although a liberal trade policy does not guarantee a rational agricultural policy, the type of agricultural policy found in many Western countries does rely on trade protection. The potential advantages of liberal trade are widely recognized: it allows consumers access to low cost and high quality goods; it encourages efficient allocation of productive resources; it disciplines domestic monopolists; it fosters progress by promoting the spread of new technology. To these four benefits, which are certainly important for CEE agriculture, there is the added fifth benefit that a commitment to liberal trade makes it impossible to contemplate a Western-style agricultural policy.

Agriculture will not enjoy the full benefits of an anticipated general liberalization in trade. In the case of the Association Agreements with the EC, the special treatment of agriculture was imposed on CEE from the outside. The December 1992 agreement on the Central European Free Trade Area, comprising Poland, Hungary, Slovakia, and the Czech Republic, demonstrates the strength of protectionist tendencies within CEE. The agreement exempts agriculture, allowing the signatories the right to protect their domestic agriculture. Tariffs will be reduced for certain agricultural products, but quantitative restrictions and other domestic policies will remain.

Current CEE agricultural trade policy is described as an attempt to strike a balance which provides the benefits of liberal trade while still protecting domestic producers (Csaki and Varga, 1992). During the beginning of the transition, Czechoslovakia, Hungary, and Poland (EE-3) were remarkable for their freedom from trade restraints. For example, the average import tariff on agricultural and food products in Czechoslovakia in 1991 was 5 percent (Czech Ministry of Agriculture, 1991). Pressure from domestic importers led to the adoption greater protection in 1992. Table II.2 shows tariff rates for EE-3. Processors, rather than primary producers, are likely to be the major beneficiaries of this protection.

Czechoslovakia, Hungary and Poland have also subsidized agricultural exports. Czechoslovakia and Poland subsidized exports of grain and livestock to FSU in 1991 and 1992 (Czech Ministry of Agriculture, World Economic Research Institute). Hungary has maintained a long-standing policy of subsidizing exports; nearly 80 percent of the 1993 Hungarian agricultural budget is allocated to measures such as export subsidies (Agra Europe 1993). The 80 percent growth of Hungarian agricultural output between 1960 and 1990 was largely achieved by subsidies and state trading which insulated Hungary from world prices. Hungarian export subsidies amounted to 12 percent of the value of agricultural exports (24.5 billion forints) in 1991 and are estimated to be 13 percent (26 billion forints) in 1992 (FAS, USDA and PlanEcon). Livestock and meat products are the most heavily supported ranging from 20-30 percent of Hungarian agricultural export receipts in 1992 (USDA, FAS, 1992). Hungary's agricultural export success in the last decade may come to haunt it as the necessary restructuring to achieve competitiveness is postponed in favor of maintaining current export earnings.

The brief period of liberal agricultural trade following reform is in danger of being replaced by a protectionist policy typical of developed economies. In this sense, reform appears to be moving in the wrong direction. The optimal staging of reform in general, and the role of trade liberalization in particular, have recently been discussed by Dornbusch (1992), Falvey and Kim (1992), and Rodrik (1992b) among others. Because of the need to raise public finance[4], the opposition by producer groups, and balance of payments problems, it is probably not possible to remove all trade restrictions in the short term. In that case, the consensus is that quantitative restrictions should be replaced by tariffs, which should be reduced according to an announced and sustainable plan. The same advice is appropriate for the agricultural sector. This does not provide an argument for an "agricultural policy" - any more than does the need to privatize and demonopolize the economy. However, public finance and the balance of payments are sometimes put forward as justifications for agricultural subsidies and tariffs. For example, despite their admitted inefficiency as a method of transfers, these policies are defended on the grounds that direct transfers are impractical because of their costs to the treasury. The exigencies of public finance may justify a general level of trade protection, but they do not provide a basis for special protection of a particular sector. To believe otherwise is to accept the proposition that policies for every sector should be self-financing, a position which tolerates the most inefficient programs. Similarly, the idea that a balance of agricultural trade is an intrinsically

[4] Poland, the Czech Republic and the Slovak Republic have instituted a VAT tax in early 1993, weakening the public finance argument for tariffs.

worthwhile policy goal is as quaint as the notion that a balance of chicken trade would serve the national interest.

What makes agriculture special? From the standpoint of CEE, one answer is that their trading partners in the West heavily subsidize their own agricultural sectors. Conceivably, this provides a reason for an interventionist approach in the CEE. We consider this issue in two parts; first the vague but compelling idea that policies in the West invite a policy response from CEE, and then the more focused argument that CEE policies are needed to set the stage for integration into the EC.

There are no limits to the emotional appeal of subsidies as a means of offsetting disadvantages. For example, socialist agricultural policy in Czechoslovakia highly subsidized those farms with poor soil or poor access to transport. If these natural and accidental features are considered a legitimate reason for government favour, how much more persuasive is the fact that foreign competitors are receiving subsidies. As a statement about fairness, this can only be an argument for income transfers, not for an agricultural policy that promotes production. Two types of beliefs might still rationalize invoking Western subsidies as a reason for CEE agricultural protection.

First, it might be thought that CEE policy has some leverage over Western policy, but this seems implausible. Western trade restrictions and agricultural subsidies make it harder to sustain economic liberalism (or democracy or the willingness not to migrate) in CEE. However, enlightened self interest has proven to be a poor match against sectoral interests in the West. Only optimists will think that concern for agriculture in CEE will hasten reform of Western agricultural policies.

Second, it might be believed that agricultural reform will quicken in the West, and that CEE agriculture will then be able to compete without subsidies, providing that it has not been allowed to decay in the meantime. This argument relies on asymmetric information (between farmers and policy-makers) or imperfect capital markets. In either case, it may provide a justification of broad support for agriculture given by credit subsidies, but it does not justify an attempt to manage agriculture by means of commodity-specific policies. The level of agricultural protection in the West does not make an interventionist policy in CEE a rational response.

General trade issues do not provide grounds for an agricultural policy. In the narrower area of food aid we might, however, expect reform in the West and also justify an active response in CEE. Food aid serves two purposes for both the donor and the recipient. The first, ostensible purpose, is the same for each: to alleviate suffering and lessen the risk of turmoil. This aid also has a less benign purpose for each party, to support producers in the West, and to discipline them in the East.

For example, US Public Law 480 is a "food aid and *market development program* focused on the needs of developing countries and *is aimed at establishing a US presence in developing markets* and supporting economic growth" (USDA 1992, emphasis added). It is not surprising that public policy should attempt to do well as it does good, but the objectives of providing aid and promoting market access may be incompatible. Western aid competes

with producers in the CEE. It not only depresses the domestic price, but can also destabilize the market. Western food shipments to Poland are an example of both effects. In autumn of 1989 farmers stored grain in anticipation of price rises. In the same year over 80 per cent of the total value of food aid to Poland was for grain. Approximately a third of grain imports was in the form of aid. In 1990 food aid was virtually the only source of grain imports. This resulted in a glut and low producer prices in 1991, which led to demands from producers for price supports. When the government is a leading agent in the crisis, it is reasonable for producers to expect government help for recovery.

Food aid and Western export subsidies are a major factor in agricultural trade; they represent attempts at providing aid and at increasing market share. In the 1992-93 crop year the US Export Enhancement Program will cover shipment of 5.5 million tons of wheat to the former Soviet Union (FSU), roughly a fifth of their average imports over the past several years. The EC credit package of 1.25 billion ECUs will finance over two million tons of grain shipments to the FSU. Most of this will come from EC stocks, although a portion of the money will be used for purchases from Eastern regions (USDA 1992). However, sales to FSU from EE-3 financed by the credit, are deducted from the export quotas the latter countries receive as part of the EC Association Agreements. Since this policy leads to increased CEE exports to FSU and decreased exports to EC, and thereby discourages the creation of new marketing channels, it may be harmful to CEE agriculture in the long run.

The mixed motives for food aid increases the danger that it has unintended effects. At least for a time Western nations will continue to use export subsidies to capture market share. There should be a clear distinction between this motive and the aim of humanitarian assistance. The responsibility for the two should be vested in different agencies. The demonstration that there are insufficient supplies in the recipient country should be a requirement for providing humanitarian aid "in kind" rather than in the form of an untied grant. This policy change can only come from the West. Although it would probably not have a large immediate effect, it would be useful as a means of clarifying Western policies, both to the public and to politicians.

CEE governments are implicated in the problem. Rowinski's (1992) analysis of the instability generated by Western agricultural aid to Poland is revealing. It would be natural to justify the decision to request the aid on the grounds that policy-makers were not able to predict the effects of the imports. However, his justification is very different: the state should not be subject to the "extortion" of the farmers demanding a high price. The view that holding stocks in anticipation of a price rise is an act of extortion, is shared by many in the West, so it is plausible that it is also widely held by CEE policy-makers. In this case, food aid is a means of disciplining producers/storers, as well as a means of feeding the population. Storage is an important way of smoothing fluctuations. Ronald Anderson (1992) shows that it can make a large contribution to stability, even in the presence of other stabilizing measures,

such as international trade. Government policy that discourages private storage is inimical to the development of the agricultural sector.[5]

In addition to destabilizing domestic agriculture, food aid may also be counterproductive if it reinforces old power structures. Vadim Ivanov, director of a Moscow economics institute, points out that food credits provide support for the bureaucratic structure that controls grain imports and distribution. He claims that "Russia has the potential to avoid all grain imports.[6] But the existing system has no desire to undo itself, even when it is no longer needed." (Rubinfien, 1993)

To summarize, we disagree with the notion that Western agricultural subsidies provide a rationale for an interventionist policy in CEE. Western agricultural policies are lamentable for a number of reasons, only one of which is their effect on CEE development. Perhaps these policies will be reformed. A clearer understanding (both in the West and East) of the role of food aid is a more immediate possibility. We recognize that there is not a sharp distinction between turning down aid on the grounds that it is destabilizing, and imposing a tariff on the grounds that the exports are subsidized. This is a grey area which could be illuminated if Western policy were more candid and consistent. CEE import policy must be also be consistent (and liberal) so that storage is not discouraged.

We now turn to the argument recently made by Munk (1992), that CEE agricultural policy is necessary in order to prepare for accession to the EC. The logic is as follows: CEE would benefit from joining the EC, it would be too costly for the EC to allow CEE into CAP if they were to arrive as net agricultural exporters, therefore CEE should adopt an agricultural policy that aims at an approximate balance of agricultural trade as a means of paving their way into the EC. We disagree with this argument on a number of grounds.

First, suppose that CAP continues to protect EC agricultural producers primarily through price support programs, as is currently the case. If accession means that CEE producers face the same prices as producers in other member countries, then in order for accession not to be costly to the EC, it has to be the case that CEE is not a net exporter at those prices. That is, it is not enough for the CEE to have a zero balance of agricultural

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[5] Grain storage and distribution in Poland provides an interesting example of a policy dilemma. This activity was previously controlled by the state grain marketing monopoly, the PZZ. In an effort to decrease monopoly power, the PZZ was divided into separate units along geographical lines. In addition, the Agency for Agricultural Marketing (ARR) has become active, and in 1992 acquired 60 percent of the grain marketed, reducing the PZZ's share to 30 percent. The ARR's dominant market position may have been partly the result of assuming the role of purchaser of last resort, in which case it provides an example of the type of policy that we believe is unwise. It may also have been part of an attempt to offset the remaining market power of the PZZ. In that case, it is likely to replace one state monopolist with another, but will do little to encourage private storage.

[6] See Section VI for support of this view.

trade; it has to be the case that this trade is balanced at the prices that will prevail after accession. Even if one knew what those prices were, there is no reason to believe that their adoption would result in balanced trade, since this depends on technology, factor endowments, and consumer tastes. Should CEE agricultural policy be designed to modify these factors in such a way that they are consistent with trade balance at prices which will be revealed some time in the future? To ask the question is to answer it.

Second, suppose as above that the basis for CAP remains price policies, but that now accession means CEE faces quotas to insure that their exports do not flood the (old) EC market. This would be a retrograde policy, since the Association Agreements negotiated in 1992 incorporate a gradual elimination of quotas; however, in the context of agriculture, no outcome is inconceivable. In this scenario, CEE is exchanging liberal entry (under the Association Agreements) for quotas but higher prices. There is no reason to suppose that CEE negotiators would accept a deal that makes them worse off. Their negotiating position would only be weakened if they already had balanced trade; they would effectively have conceded everything before the negotiations. This would be a bit like accepting a rival's demands in order to make it easier to reach an agreement.

Third, and more plausibly, suppose that the projected reforms of CAP get underway so that price policies are increasingly replaced by direct income support. This support could be justified as compensation to producers for having accepted the capital loss resulting from the diminished price support. There is no reason why it would also be given to CEE producers after accession, since, not having been protected by the original measures, they had not suffered the capital loss following their removal. To the extent that income support does replace price support, the costs to CAP and the benefits to CEE producers of accession diminish, whatever the agricultural balance of trade; to the extent that price supports remain the cornerstone of CAP, our arguments above apply.

Finally, we think that the idea of designing an agricultural policy to somehow track a large trading partner assumes an unrealistic level of knowledge about the shape that the partner's policy will take in the future, and it also assumes an unrealistic ability to manage domestic events. Aspirations to join the EC do not provide a rationale for a sector-specific agricultural policy.

A final trade-related argument for an agricultural policy is based on the disintegration of the Soviet Union and the resulting loss of markets there. Since liberalization, agricultural export subsidies have been used to maintain sales to that region. If these delay production and marketing changes needed to re-orient trade, the policies do not serve the long run interests of the agricultural sector. They merely provide an inefficient means of making transfers to producers and distributors. In addition, it is not clear that the agricultural sector has been hurt worse than other sectors by the loss of Eastern markets. We discuss this issue in Section III. Two points are worth making here. First, CEE economies had already begun to re-direct exports toward the West, even before the liberalization of the early 1990s. Second, there is evidence that the composition of CEE agricultural exports to the West and to the former CMEA was more similar than was the case for non-agricultural exports. If this evidence is correct, it suggests that the loss in Soviet markets would result in a more severe adjustment problem for manufacturing than for agriculture.

4. Does CEE agriculture require adjustment assistance?

The "adjustment assistance" argument for agricultural protection is based on the twin presumptions that the sector is declining, and for some reason it is declining too rapidly. Among the quasi-fixed factors of agricultural production, labour is the most important, for both political and economic reasons. (Workers, rather than tractors or silos, are more likely to leave the sector.) Therefore, we focus in this section on the adjustment of labour. Experience in the West shows that massive intervention slows the rate of decline but does not prevent the agricultural population from shrinking. If moderating the speed of urban migration is an objective, this might appear to provide a rationale for an agricultural policy. We consider this argument in two stages: first, the issue of whether agriculture is a declining sector, and second, the implication of adjustment costs.

The evidence is consistent with, but does not strongly support, the view that CEE agricultural population is likely to decline as a direct result of recent reforms. In Section 6 of this paper we review quantitative models of the effect on agriculture of various policy changes. These provide conflicting estimates of changes in aggregate production; they suggest considerable changes in the mix of production, but do not predict an agricultural boom. Since a large part of estimated increases in production is due to productivity gains, which includes more efficient use of labour, we interpret these models as being consistent with expectations of a future decline in the size of the agricultural population.

We have limited data on actual changes in the size of the agricultural population following liberalization, but East Germany provides an interesting special case. Paarlberg (1992) states that the size of the agricultural population has decreased by more than 80 percent. Since this is more than double the unemployment rate, it implies a huge decline in the percentage of labour employed in agriculture. However, in East Germany, as in other CEE countries, many workers employed on state farms and collectives were actually involved in manufacturing or service enterprises rather than agriculture. Following liberalization there has been a move to separate these activities from farming, leading to a reclassification of workers. Consequently, it is hard to interpret the official data. In addition, there were several aspects of East German liberalization not shared by other CEE countries, which make the fall in the agricultural population particularly severe there. First, unification resulted in an overvalued exchange rate, which discouraged the production of tradeables; second, entry into the CAP required accepting quotas on the production of certain commodities, which also contributed to a fall in the demand for agricultural labour; third, the possibility of migration to the West increased the opportunity cost of remaining in agriculture. Despite these qualifications, the East German experience is at least consistent with the view that the agricultural population will decline.

Another perspective is obtained by looking at the relation between the pre-reform share of agricultural workers and estimates of per capita GNP in CEE, and comparing these to corresponding numbers in market economies. Data on 64 countries, excluding CEE, were obtained from World Bank 1992. A group of 41 low-middle income countries with an average per capita GNP (in 1990 dollars) of $4300 had an average of 35 percent of their labour forces in agriculture; the corresponding numbers for 23 high income countries are $15,500 and 5 percent. For the sample as a whole, the numbers were $8,300 and 24 percent.

We ran various regressions relating income to agricultural labour share. In all cases the relationship is significant and negative, and explained 30 - 70 percent of the variation in agricultural labour share. The 1988 agricultural labour shares for Czechoslovakia, Hungary, and Poland were approximately 10 percent, 13 percent, and 22 percent, respectively (Table I.2). Wang and Winters (1992) summarize various estimates of per capita GNP for the three countries in 1988. The PlanEcon and CIA estimates suggest a plausible range of $7600 - $10,000 for Czechoslovakia, $6500 - $8600 for Hungary, and $5400 - $7200 for Poland. Using this GNP data and the various regression results described above, we obtain estimates of what the share of labour in agriculture would have been, had the CEE countries been market economies with the same per capita GNP levels.[7]

Comparison of these estimates with the actual labour shares suggests that the pre-reform economic systems did not lead to systematically larger shares of labour in agriculture. This implies that there is no reason to expect reform to lead directly to a smaller agricultural population. Socialist policies were designed to encourage a high degree of agricultural self-sufficiency and the policies promoted inefficient use of labour. Both of these considerations would lead us to expect those policies to result in an inordinately large share of labour in agriculture. However, labour was used inefficiently throughout the state controlled sectors, where other activities were promoted without regard to comparative advantage.

If reform leads to an increase in per capita GNP, the regression results suggest that the agricultural labour share will fall. For example, under Rollo and Stern's (1992) "optimistic scenario", per capita GNP in Poland in the year 2000 is nearly 25 percent higher than in 1988. An elasticity of agricultural labour share, with respect to per capita GNP, of -1 is within the range of estimates we obtained in the regressions described above. These estimates of increase in GNP and elasticity imply that the agricultural labour share in Poland falls from 22 percent to 17 percent. Over 1985 - 1990 the labour share fell from 24 percent to 22 percent (table I.1). Under Rollo and Stern's "pessimistic scenario", GNP per capita falls in Poland between 1988 and 2000; in that case, no decrease in the agricultural labour share is expected.

Based on the limited evidence described above, it is at least plausible that the share of the CEE labour force in agriculture will fall. This is more likely the more successful the reforms are in increasing income and labour efficiency. Thus, there is a case to be made that agriculture is likely to be a shrinking sector. Whether this implies a role for agricultural policy depends on the nature of adjustment costs, the issue we now address.

Factors of production, especially labour, move following a change in the terms of trade of the magnitude experienced by CEE agriculture. The varied reasons why the sector

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[7] These calculations are very rough, since they ignore other determinants of agricultural labour share, such as land per capita. However, we expect that the inclusion of such variables would have strengthened the conclusion. On the basis of factor endowments, CEPR (1990) and Kym Anderson (1992) conclude that CEE is likely to have a comparative advantage in agriculture. Other things being equal, economic liberalization should then lead to an increase in the agricultural population.

does not immediately reach the new long run equilibrium are often lumped together and described as adjustment costs. The marginal cost incurred during adjustment (e.g. the cost of the last worker leaving a sector over a given period of time) is increasing in the speed of adjustment (the number of workers leaving the sector over that period). The optimal speed of adjustment balances the increase in cost with the benefit of having the worker in the more productive sector. The presumption that the agricultural sector will contract, and that this will generate adjustment costs, suggests a possible role for agricultural policy. For example, it is sometimes argued that reform should proceed slowly, since the immediate removal of trade restrictions or subsidies causes a sudden deterioration in sector terms of trade and encourages too rapid adjustment, and excessive adjustment costs.

The presence of adjustment costs provides a weak rationale for a sectoral policy. First, there is nothing intrinsic about these costs that implies market failure and a role for government intervention. A policy response is appropriate only if the adjustment costs are associated with some kind of market failure, and then the policy should target the market failure rather than the costs. (See Falvey and Kim for a more detailed discussion of this point.) Two plausible kinds of market failure illustrate this: first, individuals may have poorer information or may understand the dynamic process less well than policy-makers, and second, they may face credit constraints due to imperfect capital markets. The initial effect of a deterioration in the terms of trade causes farmers to leave the sector; as they leave, the value of the marginal product of the remaining farmers increases, since there will be fewer farmers on the land and less domestic production. The decision to leave should take into account the stream of future earnings, and not merely current earnings. Farmers who do not do this, either because of the quality of their information or their inability to obtain financing for the crisis, may leave the sector when under ideal circumstances they should remain. The appropriate policies in the first case is to provide farmers with better estimates of future prices, and in the second case to make it easier for them to obtain credit.

In the examples above, the adjustment costs were born by the individual who makes the decision, and the market failure meant that he was unable to account properly for the future. Another type of market failure implies that the individual bears only part of the social cost, and that therefore adjustment is too rapid relative to the social optimum. In this case, the principal of targeting implies that the private cost should be increased, perhaps by an implicit tax on migration.

Since such a tax would not be politically acceptable, the argument leads proponents of sectoral policies to recommend these as a second best option. Such policies may have surprising and unappealing features. Karp and Paul (1993) provide an example of this using a two sector general equilibrium model. A deterioration in the terms of trade of the shrinking sector causes labour to move to the other sector; the migration results in adjustment costs, only a portion of which is born by the individual. This assumption is reasonable if, for example, marginal costs are increasing in the flow of migration, but each individual expects to pay only the average costs. An individual decides to leave the shrinking sector if the present value of the difference in wages in the two sectors is no less than the private adjustment cost. By assumption, a tariff is the only policy instrument that is available. Since private decisions result in excessively rapid migration, the optimal tariff protects the shrinking

sector, as proponents of sectoral policies would like to believe; in the long run, the tariff approaches 0, as the adjustment has by then taken place.

The interesting result is the shape of the tariff profile near the beginning of the program: the initial tariff is 0, then becomes positive. That is, the program recommends protection for the shrinking sector, but this protection is phased in and then out. The reason for this is that the initial tariff carries the usual disadvantages of production and consumption distortions, but has a negligible effect on the migration decision, which is chiefly based on *future* relative incomes in the two sectors. Therefore, it is optimal to set the initial tariff to 0, avoiding the current production and consumption loss, and to use future tariffs to affect the current migration decision. Not only is the optimal tariff program unlikely to give comfort to those who want immediate protection, it also has the disadvantage of being time-inconsistent. That is, continuation of the original program ceases to be optimal during later periods. The optimal time-consistent tariff is 0. Other models of adjustment costs lead to the recommendation of immediate protection. However, this example illustrates that the optimal policy is very sensitive to the nature of these costs, and that the path of protection may be quite surprising.

These theoretical considerations make adjustment costs an unconvincing grounds for a sectoral policy. Recent practical experience reinforces this skepticism. Again, the example of East Germany is interesting. After reviewing the adjustment assistance that has been given the agricultural sector, Paarlberg (1992) concludes that an excessive portion of this has gone to easing the costs of adjustment (e.g. unemployment benefits) rather than to promoting new investment. Begg and Portes (1992) reach the same conclusion regarding adjustment assistance for nonagricultural sectors. Many Western countries also have adjustment assistance programs. The high opportunity cost of government revenue means that these programs are not an attractive policy option in CEE. Even when adjustment assistance is self-financing, as with tariffs, the disadvantages of them outweigh the benefits.

5. Summary

The legacy of socialism and the example of Western nations creates pressure in CEE to adopt a network of policies that aim at managing their agricultural sectors. In our view this would be a mistake. We acknowledge a critical role for government in the economy. This role includes encouraging the development of institutions such as banking and stock markets, managing the process of privatization, regulating monopolists, and assisting the poor. It may also involve such illiberal but expedient measures as tariffs. This does not require pursuing an agricultural policy, a road which is paved with good intentions.

Most of the problems in agriculture are also faced by other sectors. In the interests of avoiding the proliferation of special interest groups, remedies should be designed at the national rather than the sectoral level. The advantages of the resulting decrease in government flexibility outweigh the disadvantages. Agricultural ministries should not determine agricultural policy. To the extent that special aid is available for the agricultural sector, as distinct from the general aid to the unemployed, this should be mediated through the banks. This method encourages the growth of these banks, keeps government involvement at arms length, leads to less distortion of production and investment decisions,

and will be easier to phase out, compared to price policies. Western agricultural policy makes it harder for CEE to follow this advice, but does not alter the economic reasons for doing so.

TABLE II.1 RETAIL/PROCUREMENT PRICE RATIOS FOR SELECTED FOOD AND AGRICULTURAL PRODUCTS IN POLAND AND WEST GERMANY (in percent)

Retail Product/ Primary Product	January-March 1990		January-March 1991		June-August 1991	
	Poland	W. Germany	Poland	West Germany	Poland	West Germany
Cooked Hams/Pigs	573	928	566	971	746	927
Beef/Cattle	306	344	298	454	335	428
Milk/Milk	217	206	212	217	257	225
Butter/Milk	1786	1391	2139	1389	1760	1428
Wheat Flour/Wheat	401	341	395	347	437	341

Source: Kwiecinski, 1992, table 2.

TABLE II.2 SELECTED CEE AGRICULTURAL IMPORT DUTIES, 1992 (in percent)

	Czechoslovakia	Hungary	Poland
Live Beef and Pork	25-30	0	35-40
Meat Products	30	15-20	30
Butter	30	60	40
Milk and Cream	30	30	35
Eggs	n.a.	30	25
Sugar	60	0	40

Sources: Kabat (1993), Tomczak (1992), FAS/USDA.

III. Agricultural Trading Relationships

As a basis for understanding the importance of CEE agricultural trade in the 1990s, we provide an overview of this trade during the 1980s. We present statistics on the share of agriculture in total trade, and the relative importance of different markets. We then discuss the role of the former Soviet Union (FSU) in CEE trade. More detail is provided for Hungary, Czechoslovakia, and Poland. We calculate statistics for the similarity of the composition of agricultural exports to the West and to former centrally planned economies (the "East"), and compare these to analogous measures for total exports. This comparison provides a perspective on the extent to which agriculture, relative to other sectors, has been hurt by the collapse of trading arrangements in the East.

The principal points are:
- Agricultural trade is important, but to varying degrees for CEE countries.
- CEE share of FSU grain imports is small and declined during the 1980s.
- There has been a tendency for Western markets to become increasingly important in CEE agricultural trade.
- The composition of CEE agricultural exports is more similar in Eastern and Western markets than is the case for general commodity trade.
- These last two factors tend to diminish the (considerable) damage to CEE agriculture caused by the disruption of Eastern trading relations.

Agricultural trade has been a significant part of total trade in CEE. Agricultural exports as a percentage of total CEE exports increased in 1990 over the 1987-89 level while the share of imports decreased (Table III.1). Within CEE and FSU, agriculture as a share of total exports are largest for Hungary, and smallest for FSU and Czechoslovakia. Agriculture as a share of total imports are largest for FSU; they are also important for Czechoslovakia and Poland, but much smaller for Bulgaria and Hungary.

The economic liberalization in CEE coincided with the dissolution of the eastern-bloc trading area, CMEA, leading to the interruption of the traditional trading relationships within CEE and between CEE and FSU. This reinforced a tendency, which had already been apparent, of increased importance of Western agricultural trade. Barter exchanges between CEE and FSU republics have been widely reported but are difficult to quantify. Combined CEE and FSU agricultural exports to Western Europe exceeded imports in 1990 (Table III.2). Bulgaria, Hungary, Poland, and Czechoslovakia ran trade surpluses, while the FSU, Romania and Albania ran deficits with the EC and other European nations.

With 17 percent of total FSU imports consisting of agricultural products during the 1980s, the FSU was a major market for CEE products. CEE had large market shares of FSU imports of eggs, vegetables, and fruit (Table III.3). It had a small market share for cereal, the single most important agricultural import for FSU (25 percent of their total). FSU grain imports increased at an annual rate of 3.7 percent between 1986-90, but grain imports from North America increased at an annual rate of 9 percent, and in 1988 - 90 accounted for two-thirds of the market. France, the major EC grain exporter, supplied 10 percent of the FSU grain imports by the late 1980s. Hungary, the dominant CEE exporter, lost market share over the decade, and had less than 3 percent of the market by 1990 (Table III.4).

Hungary has maintained a positive agricultural trade balance with CEE, Western Europe, and in aggregate (Table III.5). Bulgaria is the only European country with which Hungary has consistently been a net agricultural importer. The FSU and Western Europe account for 30 and 50 percent of Hungarian agricultural exports, respectively, in 1989-90. In the mid-1980s Hungarian agricultural exports to CEE and FSU exceeded exports to Western Europe, but this was reversed by 1987. By 1990, agricultural exports to Western Europe were nearly twice the level of exports to the East. Hungary is the only CEE country for which we have time-series data on the movement of specific agricultural commodities (Table III.6). This information shows that the increased importance of the West relative to the East is due to increasing meat and dairy exports to Western Europe and decreasing cereal exports to CEE and FSU.

Poland's agricultural trade balance fluctuated over 1985-90, but except for 1990, remained small (in comparison, say, to Hungary's balance). Poland maintained a positive balance with both Western Europe and the East over 1987-90. Over the last two years of the decade, exports to Western Europe were more than ten times as large as exports to the USSR (Table III.7).

Czechoslovakia was a net agricultural importer from formerly planned economies between 1980-90 but became a net exporter in 1991 (Table III.8). Agricultural exports to formerly planned economies accounted for over 30 percent of all agricultural exports from 1980-88. Agricultural imports from these economies accounted for approximately 65 percent of all agricultural imports in the mid-1980s but dropped by more than half during 1989-91.

The composition of exports between the CEE's trading partners in the formerly planned and market economies can be summarized by an "index of similarity". The index is defined as $1 - \Sigma_i(\sigma_i^e - \sigma_i^w)^2$ where σ_i^e and σ_i^w denote the shares of commodity i in total exports to the East (formerly planned economies) and West (all market-oriented economies), respectively. The index ranges from 0 to 1, with a value of 1 indicating that the composition of exports is the same for both regions, and a value of 0 indicating that exports are completely dissimilar.

Rodrik (1992a) calculates this index for total exports (including agriculture). He interprets an increase in the index as a positive sign of adjustment, since it implies that markets are being found in the West for commodities which can no longer be sold in the East. However, there is no reason to suppose that in the long run the composition of exports will or should be the same for the two regions. An increase in the index may simply mean that following the loss of markets in the East, CEE economies are failing to make the changes necessary to take advantage of trade with the West. Although the interpretation of a change in the index is ambiguous, its level is still interesting. Other things being equal, a larger value implies that the loss of markets in one region should cause fewer adjustment problems, since similar products are being sold in other markets.

Table III.9 reproduces Rodrik's indices for total exports and presents indices for agricultural exports. The most striking result is that for Czechoslovakia and Hungary, there is greater similarity between the composition of agricultural exports to the East and West, than

is the case for exports in general. (We were unable to construct the index for Poland.) This suggests that there is no reason to single out agriculture as one of the sectors which has been most severely hurt by the disintegration of FSU and the resulting loss of markets. Of course, there are other factors which point to a different conclusion. The most important of these is that in Western markets there are more import restrictions for agriculture than for manufacturing in general.

TABLE III.1
AGRICULTURAL TRADE AS PERCENTAGE OF TOTAL TRADE

	1987-1989	1990
IMPORTS		
Bulgaria	7.1	6.9
Hungary	8.8	8.5
Poland	14.3	13.2
Czechoslovakia	14.3	12.0
USSR	17.3	16.2
EXPORTS		
Bulgaria	10.5	12.1
Hungary	21.3	24.3
Poland	10.0	14.6
Czechoslovakia	4.9	6.2
USSR	2.7	2.3

Source: UN, ECE, Agricultural Review for Europe No. 34, Vol. I, 1992.

TABLE III.2
BALANCE OF TRADE OF WESTERN EUROPE FROM CENTRAL
AND EASTERN EUROPE COUNTRIES IN 1990
(millions of 1990 $US)

	Albania	Bulgaria	Hungary	Poland	Romania	CS	USSR	Total
EC	-20	76	808	692	-311	33	-946	332
EFTA	12	72	188	-21	-4	8	-140	115
Others	-19	8	249	211	-30	25	-179	265
Total	-27	156	1245	882	-345	66	-1265	712

Source: UN,ECE, Agricultural Review for Europe, No. 34, Vol II.
(A positive entry indicates that the country at the top of the table had a surplus with the region on the left of the table.)

TABLE III.3
USSR AGRICULTURAL IMPORTS FROM CENTRAL
EASTERN EUROPE AS PERCENT OF TOTAL VOLUME

	1985	1986	1987	1988	1989	1990
Cereals	n.a.	5.1	3.6	3.2	3.2	3.4
Eggs	55.3	55.5	89.8	85.7	80.0	38.0
Fresh Vegetables	74.7	69.7	78.3	76.4	67	80.6
Preserved Vegetables	99.2	99.1	99.0	99.7	97.7	94.0
Fresh Fruit	37.8	26.1	37.9	36.8	32.3	29.1

Source: UN, ECE, Agricultural Review for Europe, No. 34, table XX.

TABLE III.4
USSR CEREAL IMPORTS BY VOLUME
(in thousands mt)

	1986	1987	1988	1989	1990
Argentina	602	1,993	1,760	866	859
Australia	3,348	781	312	249	74
Canada	7,314	6,127	5,049	2,587	5,064
U.S.	3,968	9,050	17,056	22,805	15,697
France	4,225	3,971	3,400	3,397	4,174
Hungary	1,354	1,107	1,111	1,192	1,075
Other Countries	5,946	7,356	5,904	5,873	5,089
Total	26,757	30,385	35,042	36,969	32,032

Source: UN, ECE, Agricultural Review for Europe, No. 34, Vol. II, table XX.

TABLE III.5
HUNGARIAN AGRICULTURAL TRADE, 1985-1990
(in nominal million $US)

	1985	1986	1987	1988	1989	1990
Agricultural Exports To:						
Western Europe	708	775	813	977	1027	1136
European Community	487	529	593	697	757	854
Eastern Europe*	864	846	801	809	634	682
Bulgaria	5	6	7	19	3	1
Poland	67	54	22	43	53	32
Romania	15	20	25	14	10	109
Czechoslovakia	102	94	79	116	73	60
USSR	675	672	668	617	495	480
TOTAL (All Countries)	1895	1923	1926	2151	2171	2308
Agricultural Imports from:						
Western Europe	181	236	240	254	290	245
European Community	102	129	149	128	124	150
Eastern Europe*	64	94	116	91	72	115
Bulgaria	13	11	14	6	6	4
Poland	20	24	19	24	9	27
Romania	1	2	7	1	1	1
Czechoslovakia	17	29	34	26	24	36
USSR	13	28	42	34	32	47
TOTAL (All Countries)	632	773	800	766	682	700
Agricultural Balance:						
Western Europe	527	539	573	723	737	891
European Community	385	400	444	569	633	704
Eastern Europe*	800	752	685	718	562	567
Bulgaria	-8	-5	-7	13	-3	-3
Poland	47	30	3	19	44	5
Romania	14	18	8	13	9	108
Czechoslovakia	85	65	45	90	49	24
USSR	662	644	626	583	463	433
TOTAL (All Countries)	1263	1150	1126	1385	1489	1608

Sources: UN Agricultural Review, Vol. II, Tables XXIV, XXV, 1992; SITC 0, 1, 21, 22, 29,4
* Includes USSR

TABLE III.6
HUNGARIAN EXPORTS TO WESTERN EUROPE AND CEE AND FSU, 1985-1990
(in millions $US)

	1985	1986	1987	1988	1989	1990
Meat and Meat Products to:						
All Countries	471	502	553	604	608	835
Western Europe	226	233	247	327	402	545
CEE and FSU	176	196	234	214	131	227
Dairy Products & Eggs to:						
All Countries	37	39	31	32	68	100
Western Europe	11	18	17	19	39	68
CEE and FSU	n.a.	n.a.	n.a.	n.a.	n.a.	n.a
Cereals to:						
All Countries	309	281	198	296	269	194
Western Europe	30	31	29	43	42	21
CEE and FSU	275	247	166	250	220	162
Oilseeds to:						
All Countries	44	39	54	62	41	38
Western Europe	33	31	33	35	34	31
CEE and FSU	11	8	19	20	5	6
Oils and Fats to:						
All Countries	111	79	80	101	100	114
Western Europe	59	51	49	73	75	80
CEE and FSU	28	20	28	25	23	31

Sources: FAO Trade Yearbook, 1990; UN, ECE, Agricultural Review for Europe, No. 34, Vol. II, tables XXVI, XXVII.

TABLE III.7
AGRICULTURAL TRADE IN POLAND, 1985-1990
(in current million $US)

	1985	1986	1987	1988	1989	1990
Agricultural Exports To:						
Western Europe	589	671	829	914	1150	
European Community	470	561	699	760	978	1227
Eastern Europe*	194	215	194	183	149	132
Bulgaria	13	7	8	11	5	
Hungary	11	14	8	8	8	
Romania	21	20	2	6	2	
Czechoslovakia	19	26	27	25	15	
USSR	130	148	149	133	119	73
TOTAL (All Countries)	1124	1257	1484	1582	1771	1903
Agricultural Imports from:						
Western Europe	625	682	535	873	849	
European Community	403	392	335	552	576	331
Eastern Europe*	235	198	100	97	56	36
Bulgaria	21	27	37	34	18	
Hungary	57	34	13	11	14	
Romania	18	14	10	6	--	
Czechoslovakia	3	3	2	4	9	
USSR	136	120	38	42	15	9
TOTAL (All Countries)	1476	1453	1310	1640	1392	666
Agricultural Balance:						
Western Europe	-36	-11	294	41	309	
European Community	67	169	364	208	402	896
Eastern Europe*	-41	17	94	86	93	96
Bulgaria	-7	-20	-29	-23	-13	
Hungary	-46	-20	-5	-3	-6	
Romania	3	6	-8	0	2	
Czechoslovakia	16	23	25	21	6	
USSR	-6	28	111	91	104	64
TOTAL (All Countries)	-352	-196	174	-58	379	1237

Sources: UN Agricultural Review, Vol II, Tables XXIX, XXX, 1992; Karp and Stefanou (1992), Table 18, for 1990 data; SITC: 0,1,21,22,29,4.
* Includes USSR

TABLE III.8
AGRICULTURAL TRADE IN CZECHOSLOVAKIA, 1980-1991
(in million korunas nominal)

	1980	1985	1987	1988	1989	1990	1991
Ag Exports to:							
Market Economies	4,288	4,079	4,484	5,059	9,136	18,232	18,615
Formerly Planned Economies	1,998	2,874	2,553	2,646	2,005	3,767	9,343
All Countries	6,286	6,953	7,037	7,705	11,141	21,999	27,958
Ag Imports From:							
Market Economies	5,232	3,821	3,595	4,080	10,843	19,476	17,983
Formerly Planned Economies	5,317	7,814	7,158	7,651	6,368	7,875	3,414
All Countries	10,549	11,635	10,753	11,731	17,211	27,351	21,401
Ag Balance:							
Market Economies	-944	258	889	979	-1707	-1,244	632
Formerly Planned Economies	-3,319	-4,940	-4,605	-5,005	-4363	-4,108	5,929
All Countries	-4,263	-4,682	-3,716	-4,026	-6070	-5,352	6,557

Sources: Facts on Czechoslovak Foreign Trade, 1989 and 1990; Statisticke Prehledy (Monthly Statistics of Czechoslovakia), Federal Statistical Office, June 1992, table 28.

TABLE III.9
CHANGING COMPOSITION OF EXPORTS IN CEE

	1980	1985	1986	1987	1988	1989	1990	1991
	Agricultural Exports							
Czechoslovakia	.988	.962	--	.981	.991	.910	.966	.981
Hungary	--	.799	.880	.926	.879	.803	.898	
	Total Exports							
Czechoslovakia	.794	.700	--	.760	.706	.803	.835	.956
Hungary*	--	--	.856	--	--	--	.832	--
Poland*	--	--	.755	--	--	--	.716	--

*Indices reported in Rodrik (1992a).

Sources: Facts on Czechoslovak Foreign Trade, 1989 and 1990; Statisticke Prehledy (Monthly Statistics of Czechoslovakia), Federal Statistical Office, June 1992, table 28; FAO Trade Yearbook, 1990; UN, ECE, Agricultural Review for Europe, No. 34, Vol. II, tables XXVI, XXVII.

IV. Subsidies in CEE Agriculture

Subsidies were used in CEE before the transition as part of the policy to ensure ample food stocks and near food self-sufficiency. The subsidies distorted both the domestic and international trade of agricultural commodities. This section provides an overview of those policies. We begin by describing the type of summary statistics available for consumer and producer subsidies, and then present and discuss the data. We then outline specific policies that were used in Czechoslovakia and Hungary.

The main points are:

- The aggregate producer subsidies in CEE were no higher than those in the West; for many commodities CEE producers received low subsidies.
- Income support policies dominated price supports until the late 1980s.
- Fluctuations in Czechoslovak and Hungarian support levels were primarily due to fluctuations in world prices, while in Poland domestic policy changes also contributed to fluctuating support levels.
- Despite large nominal subsidies, on balance consumers were implicitly taxed by the inability to trade at world prices.
- Producer subsidies created incentives to provide poor quality at high price.
- Polish subsidies to processors, which were determined on the basis of an enterprise's production costs, increased from 3.4 percent to 5.9 percent over 1985 - 87.
- Czechoslovak agricultural and food processing sector subsidies were largely used to offset the disadvantages of enterprise endowment (e.g., soil quality) and infrastructure (e.g., location to transportation lines).
- Hungarian food processors acquired an increasing share of subsidies compared to the agricultural production sector during the middle to late 1980s.

1. Producer and Consumer Subsidy Equivalents

This sub-section describes the extent to which producers and consumers of agricultural commodities were subsidized or taxed prior to reform. We present statistics for Western as well as CEE countries. Comparisons across commodities, within a country, suggest likely directions for the reallocation of resources following a reform which leads to a more uniform tax policy. If a particular commodity was relatively heavily subsidized in the pre-reform period, a movement toward a uniform tax policy would make that commodity less attractive for new investment. For example, production of live meat and animal products (e.g., milk, eggs) was heavily subsidized, suggesting that reforms might be detrimental to those sectors, relative to the grain, oilseed, and sugar sectors.

Comparison across countries within CEE indicates the scope for agricultural reform and the potential for future production increases. The historical levels of producer subsidies have to be taken into consideration when using past output levels to estimate potential output. Information on subsidies qualifies the relation between past output and natural advantages. Comparison of historical CEE and Western levels of support is also relevant to the debate within CEE, where an important justification for an active agricultural policy rests on ideas of justice rather than economic efficiency. When historical levels of support in CEE were no higher than those in the West, it is harder to defend (to producer groups, at least) a unilateral reduction of support to CEE agriculture.

Countries at early stages of development tend to tax their agricultural sector and countries at more advanced stages tend to subsidize agriculture. The CEE countries, at an intermediate stage, might be expected to pursue a broadly neutral policy toward agriculture. However, the central planners' preference for autarky encouraged agricultural protection.

The principal summary statistics for the degree of support to agricultural producers and consumers are the producer and consumer "subsidy equivalent" (PSE's and CSE's, respectively), expressed in ad valorem terms. PSE's are obtained by adding together the total

value of transfers, in the form of direct payments and price supports, and dividing by the value of production at world prices. Similarly, CSE's give the ratio of the difference in the value of the consumer's expenditure at world and domestic prices, and the value of consumption at world prices. These statistics are valuable because they are available for many commodities and countries, and they were prepared using similar methods; thus they can be used for cross-commodity and cross-country comparisons.

However, there are four major drawbacks to these measures. The first two are more relevant to PSE's than CSE's. First, in aggregating all sources of producer support, the measures do not make a distinction among the various policies. Reduction in a PSE caused by reducing output subsidies is likely to have a much greater effect on production than would a reduction in an input subsidy. Reduction of an input subsidy would have a greater effect on production than would a reduction in direct income support. The same value for a PSE can be associated with sets of policies implying different levels of distortions. Consequently, a given reduction in a PSE is consistent with different reductions in the economic distortion. For the purpose of estimating the supply effect of a general reform, this objection is not too serious since most models are not sufficiently detailed to distinguish amongst different policies. In addition, there may be no reason to believe a general reform will affect certain policies more than others. However, for cross country comparisons of levels of support, the objection is more important. For example, the data suggests support policies in Czechoslovakia and Hungary were more heavily weighted toward income rather than price support, while Poland was more dependant on price support policies. A uniform reduction of policies would consequently be expected to lead to a greater supply response in Poland than in the other two countries.

The second objection to the use of PSE's is that they are likely to exaggerate the importance of input subsidies in CEE. Since state-controlled input sectors in CEE produced low quality goods, an input subsidy to producers may have been only a partial compensation for the inability to purchase inputs on the world market. This implies that a direct comparison of PSE's between CEE and the West is likely to exaggerate the amount of support producers in CEE received.

The third shortcoming is also the most intractable. Since PSE's and CSE's involve a comparison of domestic and world price, they require the use of an exchange rate. This is a serious problem for CEE, where neither the official nor the parallel exchange rates of the 1980's were reliable measures of the shadow value of foreign exchange. The use of an overvalued exchange rate, by decreasing the world (dollar) price in terms of domestic currency, overstates the true PSE and understates the true CSE. The authors who calculated the PSE's for CEE we give below, discuss this problem. We report their "best estimate" of PSE's, but we note that in many cases the use of a lower valued exchange rate would have reversed the conclusion that a sector was subsidized.

The fourth problem with these measures of support is that they do not capture the effect of quantity constraints. For example, if consumers pay less than world price, this shows up as a positive CSE. However, if they also face a quota, they may be willing to pay more than the world price for another unit of consumption; liberalization which removes both the subsidy and the quota could lead to higher consumption. In that case, the pre-reform regime implicitly taxes consumers, whereas the CSE suggests incorrectly that they had been subsidized.

Despite these shortcomings of the PSE and CSE, they provide useful estimates of the magnitude of previous distortions, and they indicate the potential for reform. Table IV.1 presents the PSE's for CEE and the EC and US for comparison. Aggregate PSE and CSE measures are weighted averages, with weights being the share of value of the commodities. For CEE, the aggregate PSE and CSE levels are a weighted average of commodities included in Tables IV.1 and IV.3. Aggregate PSE and CSE measures for FSU, EC, and US include

additional commodities. This data indicates that CEE and USSR agricultural producers were not supported as highly as those in the EC and US in aggregate.

The aggregate statistics disguise considerable cross-commodity variation. At the aggregate level, Hungarian agricultural producers were taxed in 1989, but support to Hungarian beef and veal production is as high and higher than the EC and US, respectively. Sugar and rapeseed (indicated as oilseeds in Table IV.1) production were taxed in CEE as was Czechoslovakian and Hungarian grain production. (Hungary currently subsidizes grain exports.) In contrast, the EC and US taxed none of the agricultural products identified in Table IV.1. The taxation of Polish producers began recently. Between 1983-1988, milk was the only commodity that was taxed. The taxation of Czechoslovakian and Hungarian producers in 1989 is representative of the pattern for the 1980s, when grain and rapeseed producers were taxed and meat producers were subsidized.

Table IV.2 partitions the level of producer subsidy (or tax) into price support and income support components for Czechoslovakia, Hungary, and Poland between 1983-91. Occasionally in Czechoslovakia (1985-86, 1988) and Hungary (1985) the price policies which taxed producers were overwhelmed by the subsidizing effect of the income support programs. The income support contribution was always positive and, for Czechoslovakia and Hungary, exceeded the effect of price policies during most of 1983-91. Polish income support matched or exceeded price supports in the aggregate between 1985-87 and 1989. From 1988-1991 the price interventions taxed producers; the level of support from income subsidies decreased, so that the net effect was a producer tax. Data for the USSR in 1986 suggests that income support programs in that country provided slightly more than half of a PSE of 21 percent (Liefert et al.).

The price and income support contributions to total PSE fluctuate during the 1980s for Czechoslovakia, Hungary, and Poland. Over this period, domestic prices and policies remained relatively constant in Czechoslovakia and Hungary, while fluctuations in world prices were the major source of instability in total PSE levels. The fluctuations in Poland's PSE levels are due to both changing domestic income support policies and fluctuations in world prices and the exchange rate.

CSE's presented in Table IV.3 for 1989 indicate that CEE consumers were taxed. Hungary had the lowest aggregate tax (1 percent) and Poland the largest (35 percent). All three CEE countries taxed consumption of beef, butter and vegetable oil and subsidized consumption of poultry. The FSU (in 1986) taxed only the consumption of poultry and subsidized consumption of the other selected food products and food consumption in aggregate. In aggregate, EC consumers were taxed at the same level as Polish consumers, while U.S. consumers are taxed at the level of Czechoslovak consumers. The use of an overvalued exchange rate in calculating CSE's would exaggerate the extent of the consumer tax (understate the subsidy), whereas failing to account for the fact that demand was constrained by quotas underestimates the extent of the tax.

The CSE data may appear to contradict the conventional view that food consumption was subsidized and that the removal of these subsidies would lead to falling consumption. This view is based on the fact that consumption subsidies were a significant part of government budgets prior to the reform. However, these subsidies reflect the difference between consumer prices and production costs, whereas the CSE's involve a comparison between domestic consumer prices and world prices. Therefore the CSE data is consistent with large budgetary outlays for consumption subsidies. Taken together, they imply that the removal of consumer subsidies and the ability to trade at world prices would be likely to benefit consumers.

2. Additional Information on Subsidies

The manner in which subsidies were delivered differed across CEE. After a brief sketch of the Polish situation, we turn to a more detailed description of Czechoslovakia and Hungary.

Subsidies to agricultural processors were determined for each enterprise on the basis of its production costs. Estimates from Cochrane (1990) and PlanEcon (December 1990) imply that during 1985-87 subsidies to food processors increased from 3.4 percent to 5.9 percent of GDP with an average level of 4.5 percent of GDP. Cochrane estimates total consumer subsidies in 1986 were equivalent to 16 percent of the value of food consumed.

Czechoslovakia: The policy of fixing retail prices below total production costs was followed from 1967 until 1989. Consumer prices over this period ranged between 80-85% of the total food production cost before subsidies to primary producers and food processors (Table IV.4). Production costs increased over this period, with only a fraction of this increase passed on to consumers.

The agricultural cooperatives were presented with a plan indicating the range of commodities to produce (but no explicit production targets) and the organization of the cooperative. These plans did not account for the growing conditions of each cooperative. The cooperatives reacted to price signals within the constraints of producing the required commodities. Agricultural commodity prices were fixed, but cooperatives received different premiums (defined as the percentage increase over the base price) to compensate for poor growing conditions and access to transportation networks. Some cooperatives in the mountainous regions of Central and Eastern Slovakia received premiums of 80-100 percent.

In addition to input and output price subsidies, cooperatives received non-price subsidies. The non-price subsidies included payments for investments, housing construction, and equipment necessary to maintain the food processing infrastructure (or links between the production and retail sectors). Subsidies occurred at both the farm production and at the processing stages, with the volume of these fluctuating over the 22 year period. Restrictions begun in 1986 limited the range of input subsidies. Allowable subsidies included those for protein feed to offset the difference between imported and domestic prices, calcareous and organic fertilizers for ecological reasons, and industrial composts to help dispose of industrial and municipal waste. Agricultural chemicals were no longer subsidized.

The ratio of producer prices to retail food prices increased with the rising cost of farm production, which was caused principally by the increase in the cost of material inputs. The state was reluctant to let retail prices keep up with rising farm product prices paid by processors. In addition to price supports, the food industry received compensating and bridge subsidies. Compensating subsidies met the widening gap between food processing cost and retail prices (Federal Ministry of Health and Nutrition).

Bridge subsidies were introduced to account for variations in the quality of farm product inputs, principally in the livestock and milk processing industries. The processing sector paid a premium for higher quality farm inputs and consumers paid a premium for higher quality products at the retail level. Food processors contracted with farm producers (the cooperatives and state farms) to deliver products of specific quality for specified prices. When the actual product supplied to the food processor was of a lower quality than contracted, the farm received the contracted price and the food processor received a bridge subsidy to compensate for low quality. The five-fold increase in bridge subsidy payments between 1979 and 1981 indicates the inefficiency of this particular subsidy. Since farm producers were not penalized for delivering lower quality products, the bridge subsidies were implicit subsidies to the farm production sector via the food processing sector - a transfer from the state to the food processing sector and then a transfer from the food processing sector to the farm production sector.

Table IV.5 illustrates the breakdown of subsidies and their contribution to farmers' income. The value of these subsidies as a share of income for the agricultural sector declined over the 1980s in large part due to the elimination of the bridge subsidies. Even without these, subsidies to agricultural and food production still decreased from 9 percent of agricultural income in 1981 to 4.3 percent in 1989.

From 1976-1989 nominal production costs increased by 134 percent. Wages increased 41 percent, material input costs increased 127 percent, chemical inputs and construction costs increased 158 percent, and other financial costs (from worker bonus programs, higher interest rates and wage taxes) increased 389 percent (Federal Ministry of Health and Nutrition). The cost of inputs of agricultural origin (eg., seed and feed) increased only 80 percent. The increased production costs required adjustments in prices and subsidies.

Hungary Hungarian budget subsidies in 1980-82 were evenly distributed between the agricultural and food processing sectors (Table IV.6). Since 1983 the food processing sector began to attract a larger share of subsidies, obtaining 62 percent between 1983-89, and 73 percent in 1987. Projected agricultural and food processing industry subsidies for 1991 indicate nearly 70 percent went to food processors. Production subsidies as a percentage of GDP began to rise during the 1980s averaging 7.3 percent between 1980-82, 8.2 percent between 1983-85, 10 percent between 1986-89, and are estimated at 9 percent in 1991. These subsidies exceeded tax income from these sectors in 1980, 1981, 1983, 1987, and 1988. Net food subsidies (after subtracting tax receipts from tobacco and alcohol sales) accounted for .5 percent of GDP which contrasts with the USSR where in 1990 the direct food subsidy bill alone accounted for 11 percent of GDP (Csaki and Varga, 1992).

TABLE IV.1 PRODUCER SUBSIDY EQUIVALENTS, 1989

	Barley	Beef & Veal	Corn	Eggs	Milk	Poultry	Pork	Oil-seed[a]	Rye	Sugar Beet	Wheat	Aggregate
Czechoslovakia	-30	77	-3	22	5	n.a.	38	-45	17	-9	-22	20
Hungary	-18	53	-26	1	25	10	-3	-75	8	-25	-14	-3
Poland	51	3	n.a.	65	-7	31	4	-1	28	-21	42	2
USSR	n.a.	32	56	n.a.	1	46	20	-16	n.a.	55	-31	21
EC	34	55	40	16	59	26	6	60	n.a.	49	27	41
US	-	32	30	8	55	10	7	9	0	43	25	28

Sources: Europe Branch, ATAD/ERS, U. S. Department of Agriculture. OECD, Tables of Producer Subsidy Equivalents and Consumer Subsidy Equivalents, 1979-1990, Paris 1991; Liefert et al., Table 1; USSR PSE levels are for 1986.

n.a. = not available

[a] Rapeseed is reported for Oilseed for Czechoslovakia, Hungary and Poland.

TABLE IV.2 PERCENT CONTRIBUTIONS OF PRICE INTERVENTION AND NON-PRICE SUPPORTS TO PSE's IN CEE

	1983	1984	1985	1986	1987	1988	1989	1990	1991
Czechoslovakia	0[a] 12[b]	-16 13	-12 13	-8 12	2 11	-7 12	11 9	n.a.	n.a
Hungary	n.a.	n.a.	-3 10	1 11	10 11	-3 10	-10 7	n.a.	n.a
Poland	23 4	22 2	18 17	18 18	0 18	-34 5	-3 5	-30 2	-11 0

[a] Price support contribution to total PSE. [b] Income support contribution to total PSE.

NOTE: Price and income support contributions sum to total PSE.

Source: Total PSE calculations provided by Europe Branch, Agricultural Trade Analysis Division, ERS, USDA.

TABLE IV.3
CONSUMER SUBSIDY EQUIVALENTS, 1989

	Wheat	Pork	Beef & Veal	Chicken	Milk	Butter	Veg. Oil	Aggregate
Czechoslovakia	3	-36	-15	5	79	-37	-59	-16
Hungary	-9	-14	-2	0	-22	-15	-36	-1
Poland	-9	35	-45	2	-54	n.a.	-49	-35
USSR (1986)	66	2	82	-28	29	58	110	32
EC	-18	-12	-49	-29	-49	0	0	-34
US	-1	1	-25	0	-45	0	0	-16

Source: Source: Europe Branch, Agricultural Trade Analysis Division, ERS, USDA.

TABLE IV.4
RELATIONSHIP BETWEEN RETAIL FOOD PRICES AND
PRODUCTION COSTS, CZECHOSLOVAKIA
(in percent)

	1967	1977	1980	1984	1986	1988	1989
Ratio of Aggregate Retail Price to Unit Production Cost	80.3	84.4	84.4	82.6	81.9	80.9	81.4

Source: Federal Ministry of Health and Nutrition (translation), table 1, February 1990.

TABLE IV.5 SUBSIDIES TO CZECHOSLOVAKIA AGRICULTURE
(in million korunas nominal)

	1967	1979	1981	1983	1985	1989
Subsidies to:						
Food Production	332	254	270	298	368	294
Retail Price Support to Food Processing	686	396	400	420	447	294
Compensating	2182	2506	2410	2510	1511	1995
Bridge	0	5236	10095	4399	0	0
Total	3200	8392	13175	7627	2326	2583
Total as Percent of Agricultural Income	n.a.	n.a.	38.2	16.7	5.3	4.3

Source: Federal Ministry of Health and Nutrition (translation), table 4, February 1990.

TABLE IV.6
AGRICULTURAL AND FOOD INDUSTRY SUBSIDIES IN HUNGARY, 1980-91

Year	(In Nominal Billion Forints) Subsidies to:		(Nominal Forints)	Total Agricultural and Food Industry Subsidies as % of GDP
	Agriculture	Food Industry	GDP	
1980	27.6	27.1	751.0	7.3
1981	29.0	28.3	772.6	7.4
1982	28.6	27.5	794.5	7.1
1983	29.8	35.0	800.3	8.1
1984	27.7	40.8	821.5	8.3
1985	24.7	41.4	819.4	8.1
1986	29.5	51.7	832.0	9.8
1987	34.9	56.3	865.7	10.5
1988	34.9	49.7	864.8	9.8
1989	32.4	53.2	866.6	9.9
1990	n.a.	n.a.	831.9	n.a.
1991	21.6	47.6	765.3	9.0

Source: Hungarian Ministry of Finance (reported in Csaki and Varga) and PlanEcon.

V. Privatization of Agriculture

The goals and methods of agricultural privatization vary across CEE. After providing an overview of these, we discusses features important to the individual countries. The slow progress of privatization of agriculture underscores the need to: (i) promote growth in the private sector by reducing administrative barriers and increasing access to credit, and (ii) increase competitive pressure by allowing liberal trade.

Privatization is viewed as both a necessary stage in the movement towards a market economy and a means of achieving a political goal of restitution. Czechoslovakia's privatization laws are designed to return the actual land and assets to former owners and their heirs, while the Hungarian restitution policy focuses on compensating those whose assets were confiscated with an in-kind transfer of vouchers. Czechoslovakia is willing to allot a certain percentage (typically no more than 40 percent) of privatized firms to individuals interested in participating in the voucher program. Hungary is attempting to restructure firms to be privatized, assessing the firms' value and negotiating a sale at a fair market price. The Hungarian approach generates income for the state, but the Czechoslovakian approach can achieve privatization more quickly. A voucher/coupon distribution scheme under discussion in Poland has not been instituted. The restitution aspect of privatization is not as urgent in Poland, where there was less state expropriation and collectivization of farms.

All the CEE countries have a policy of demonopolization of agricultural input and food processing industries as the initial step of relinquishing state control. Demonopolization involves delegating control to local managers, but does not imply privatization. Since it is still not clear who owns and controls the assets, there is little accountability for decisions at the firm level. The removal of subsidies has left many state controlled enterprises insolvent but not formally bankrupt. As competition increases (from both imports and new private domestic enterprises), state enterprises unable to compete will fail. One way that privatization occurs is through the withering of state enterprises and their replacement by private firms. Liquidation of parts of enterprises is taking place. Cooperatives engaged in the production of multiple products are ceasing or spinning off unprofitable activities to private operators.

The remainder of this section discusses the privatization of agriculture in individual countries. Where information is available, we also describe the financial status of the agricultural sector. Insolvency of enterprises is a greater obstacle to the privatization process than is the administrative burden of restitution.

1. Czechoslovakia

In Czechoslovakia there is a division between small and large privatization. Small privatization concerns shops and businesses which were auctioned off in late 1990 and early 1991. Large privatization involves factories and agricultural enterprises. Uncertainty regarding the settlement of restitution claims has impeded the process. Many potential claimants of agricultural production assets are not interested in filing claims, which have averaged approximately 1 hectare (Potransky, 1992). In many cases the land is not near the current family residence; family members have no interest or training in agriculture, and must

start paying land taxes once the claim is successfully processed. Owners of reclaimed land have the opportunity to rent the land to the cooperative if it is still in operation.

The transformation of agricultural and non-agricultural assets is addressed by separate laws for land and for non-land assets (e.g., buildings, equipment, livestock). Both laws emphasize restitution of these assets to past owners or their heirs and impose the administrative burden of this on the enterprises. If past owners or heirs do not identify themselves, the agricultural cooperatives and state farms must identify them and return assets. The law privatizing the cooperative's non-land assets is based on liquidation and distribution of assets according to a formula which returns 50 percent to past owners, 30 percent to current employees, and 20 percent to former employees. The land transformation law limits restitution to 150 hectares of arable land or 250 hectares of non-arable land, including pasture, forest and non-agricultural land (Transformation Bill, 1991). Cooperative farms are required to reorganize as voluntary cooperatives, shareholding companies, or partnerships.

There have been few changes in the Czechoslovakian private agricultural sector since the initiation of price liberalization and other economic reforms in 1991. The Czechoslovak government's goal was to have private farms account for 20 to 30 percent agricultural production (Krsek, 1992). The Czech Republic contains twice the amount of land in private agriculture as in Slovakia, although the average size of the farms is the same (Table V.1). Since the Czech Republic has approximately twice the population and land area, and since there were virtually no private farms before 1990, this suggests that thus far, the speed of privatisation has been similar in the two republics. However, the fact that agriculture is more important in the Slovak Republic, coupled with the more liberal economic outlook of the Czech Republic, suggests that future agricultural privatization will occur more rapidly in the latter state. Nearly all private farms (99 percent in both republics) are less than 2 hectares. However, preferential investment subsidies offered to private farmers holding 2 hectares or less encouraged under-reporting.

In 1991 agricultural production subsidies were available only to private farmers who were "market-oriented" and whose principal source of income was agriculture. There were 4,728 recipients (less than 1 percent of all private farmers in the Czech Republic) who accounted for 90,358 hectares (2.2 percent of total agricultural land in the Czech Republic) with an average area of 19 hectares. This compares to 4.5 percent of total agricultural land privately held in the Czech Republic. Assuming that nearly all eligible private farmers received subsidies, the small number of recipients implies that privatization of substantive agricultural holdings (as opposed to private gardens) is low (Czech Institute for Agrarian Economics, 1992).

A primary goal of privatization of the agricultural input and food processing industries is to integrate production, processing and retailing. In developing a plan to privatize a food processing firm, a fixed fraction of the total shares are reserved for producers. Many agricultural cooperatives are insolvent and not able to purchase these; the producers are then given subsidies to buy the shares.

Agriculture is more important and in greater financial difficulty in Slovakia than in the Czech Republic. Slovak agricultural cooperatives for the entire range of land quality (represented by the soil unit rating) had operating profits in 1990 (Table V.2) These profits were due to subsidies (12.9 billion kcs., or approximately $450 million in 1990), and their removal in 1991 resulted in losses across the range of soil types. The 1991 loss in Slovak agriculture was 9.4 billion kcs, compared to a pre-subsidy loss of 14.3 billion kcs in 1990. The financial hardship is concentrated in the East; 27 percent of the western Slovak agricultural cooperatives and state farms had an operating profit in 1991 while virtually all in the central and eastern regions operated at a loss (Table V.3). In 1991 tax obligations estimated to be 1.9 billion kcs were initially postponed and then forgiven.

2. Hungary

Legislation to clarify property rights has been debated since early 1990. In 1989, cooperatives owned 61 percent of the land they manage, with members owning 35 percent and the state owning 4 percent (Csaki and Varga, 1992). The initial legislation which treated the compensation of owners of agricultural land differently from non-agricultural land owners was ruled unconstitutional. The National Recompensation bill identifies the original owners (and their heirs) of all properties (agricultural and non-agricultural) nationalized or collectivized after August 1949 as eligible for compensation. Compensation can take the form of currency or vouchers used in the privatization of state properties. Former landowners are offered the opportunity to acquire land equivalent in size and productive quality to the lost property; quality is determined on the basis of soil rating.

A separate law concerns the restructuring of cooperatives. Agricultural cooperatives have diversified into non-agricultural enterprises. Consequently, many agricultural cooperatives may remain viable even if they lose access to their farm land via compensation proceedings. The fate of state farms is determined separately from cooperatives. Located mainly in less desirable areas, the state farms are partitioned into three categories: a) those to remain public, b) those to be fully or partially privatized, and c) those to be liquidated.

Privatization of the food processing industry will follow the general policy of industrial privatization on a case-by-case valuation and sale. Firms will be offered for sale once they are restructured and valued. This approach aims to minimize corruption and to secure revenue for the government. While smaller enterprises can be quickly sold through this process, the restructuring and valuation of larger enterprises is expensive and slow. The state food processing sector includes:

* 11 sugar processing firms,
* 27 firms with 64 plants in meat processing, and
* 41 bakery firms with 568 plants.

Cooperative enterprises compete in some of these areas. The food processing sector is less concentrated than in many larger countries and privatization should quickly lead to a high degree of competition.

3. Poland

The state farms in Poland (the PGRs) have recently operated at a loss with no net transfers to the state treasury. In 1992, 95 percent of the state farms had heavy losses, estimated to total over $10 million per week. These farms were not paying suppliers for inputs or land taxes to the state. The state farms were able to acquire a reduced level of inputs from state suppliers, who were partially compensated with the farms' agricultural output. Only a few state farms have actually been liquidated, with approximately 60 farms "in liquidation" but still operating and only 2 farms actually privatized (Rozwadowski, 1992; World Economic Research Institute, 1992).

In an effort to prevent administrative redundancy and the creation of new monopolies, the Polish privatization strategy is largely coordinated by a separate ministry (the Antimonopoly Office) that evaluates the inter-sectoral impact of privatization plans. Agricultural firms account for 12.5 percent of firms initially targeted for privatization (Table V.4). Laws to facilitate the restitution of farms and enterprises confiscated by the state are under consideration. The Polish Anti-Monopoly Office is supervising the restructuring of many enterprises. One-third of more than 100,000 decisions rendered by this office concerned agriculture and the environment. Transfer of ownership is to occur by (i) restitution of assets to past owners (estimated at 20 percent of the cases, (ii) designating the enterprise as belonging to the state treasury, or (iii) either liquidating, selling or leasing, or arranging a worker buyout (Anti-Monopoly Office, 1992). Compared to Czechoslovakia and Hungary, restitution claims do not present a significant burden to the privatization process in Poland.

The Agricultural Property Agency (AWR), after initial reluctance, made a commitment to begin the privatization of state farms and agricultural properties in early 1992. It has been difficult to sell land from the former state farms; less than 10 percent of the amount put on the market found a buyer, and the real price of this land fell by 50 percent in 1992 (Agra Europe, 1993). While the Polish Treasury retains ownership of land, the AWR assumed control of all debts and non-land assets. The AWR plans to complete privatization by 1993 and in the interim period plans to rent the state farms or contract managers to operate them. The World Bank agricultural adjustment loans approved in June 1992 were designed to advance the privatization and restructuring of agricultural processing industries, with focus on the poultry/eggs, sugar and potato processing industries (World Bank, 1992b). While the privatization process of some industries (e.g., meat and sugar processing) was begun in the last 2-3 years, progress has been very slow. For example, only one of 80 sugar processing plants had been privatized by the mid-1992 (Anti-Monopoly Office, private communication).

TABLE V.1
SIZE DISTRIBUTION OF PRIVATE FARMS IN THE CZECH (CR) AND SLOVAK (SR) REPUBLICS, JANUARY 1, 1992

Farm Size (in hectares)	No. of Farms		Total Area		Average Area	
	CR	SR	CR	SR	CR	SR
.1 - 2.0	568,714	292,639	162,342	78,420	0.29	0.27
2.0 - 5.0	3,778	2,464	10,952	8,428	2.90	3.42
5.0 - 10.0	972	507	7,375	4,082	7.00	8.05
10.0 - 30.0	340	113	4,875	1,546	14.34	13.68
30.0+	28	23	3,577	9,254	127.75	184.95
Total	573,832	295,746	189,721	96,730	0.33	0.33

Source: Czech Ministry of Agriculture and Kabat (1992).

TABLE V.2
PROFITS/LOSSES PER HA OF AGRICULTURAL LAND IN SLOVAK REPUBLIC
(in korunas nominal)

Year	Slovak Republic Average	1-20 s.u.	21-42 s.u.
1990	1,029	720	1,341
1991	-,337	-2,957	-6,214

Source: Slovak Ministry of Agriculture, Food and Nutrition, page 8.

Notes: Soil unit (s.u.) rating ranges from 1 (best) to 42 (worst). Profits in 1990 include production subsidies to cooperatives and state farms which were eliminated in 1991.

TABLE V.3
COOPERATIVE AND STATE FARM LOSSES IN SLOVAK REPUBLIC (1991)

	No. of Co-operative and State Enterprises	Losses	Profit	Percent
W. Slovak	413	311	102	27.4
Central	261	258	3	1.15
Eastern	298	292	6	2.01
Total	972	861	111	11.46

Source: Slovak Ministry of Agriculture, Food and Nutrition, page 7.

TABLE V.4
POLISH STATE ENTERPRISES SELECTED FOR PRIVATIZATION IN 1991

Sector	Number of Firms
Agriculture	110
Communications	1
Construction	223
Forestry	3
Industry	352
Trade	94
Transportation	49
Others	49
TOTAL	881

Source: World Economy Research Institute.

VI. Quantitative Effects of Reform

There have been a large number of attempts to quantify the effects of recent and proposed agricultural reforms. We begin this section with a review of models which focus on the effects of reform within CEE and the FSU; the second part broadens the scope to consider the effects on CEE of external reforms, particularly those in the EC.

These estimates discussed below rely on multi-commodity, multi-country agricultural models. The sub-model for each country consists of supply and demand relations for the different commodities, which imply net import demand. The supply and demand parameters for market economies are either estimated econometrically, obtained by calibration, or taken as the informed guesses of commodity specialists. Informed guesses are the principal source of parameter values for models of the Eastern economies; since there is less information and experience behind these guesses, the results have a weaker basis.

In spite of the limitations of these models, they are a systematic way of using the imperfect information that is available. As such they provide a useful perspective on the likely qualitative effects of reform, and probable orders of magnitude. The review suggests the following main conclusions:

•Unilateral reform in Poland increases output of the pork sector; reform of the CAP may moderate this effect, as resources in the EC flow into the pork sector.
•Reform in CEE leads to aggregate welfare gains due to decreased government expenditures and improved access for consumers; producer profits falls, despite significant cost savings resulting from productivity increases.
•Reform in CEE improves their agricultural trade balance; meat exports and grain imports both increase.
•Increased efficiency in the grain sector in the FSU and rationalization of the livestock sector leads to a large reduction in grain imports, and possibly a switch to exports.
•The magnitude of the potential change in FSU trade swamps changes in CEE trade and more than offsets changes that are likely to result from reform in the West.
•The benefits to EE-3 resulting from the Association Agreements is very modest, but liberalization in the EC offers large potential benefits to CEE producers.
•The increased cost to the EC budget of *price support policies* which results from including EE-3 in an unreformed CAP, are twice the cost of inclusion of East Germany; including EE-3 in a reformed CAP reduces by half the budget savings caused by the reform.

1. Reform within the CEE and FSU

Market liberalization is defined as the partial or wholesale removal of PSEs and CSE's. To the extent that PSEs exaggerate the true extent of the subsidy to producers (for reasons explained in section IV), the model's predictions exaggerate the effect of liberalization. Agricultural policies in Western countries are treated as tariff equivalents, whereas in fact many are quotas or a combination of tariffs and quotas. This means that the models are likely to exaggerate the trade effects when unilateral CEE liberalization leads to

increased output. If excess supply increases and the exporters face quotas, the result is a deterioration in their terms of trade and a decline in export revenue, rather than an increase in the volume of exports. Thus, the predictions may be too optimistic, since they are based on models which tend to exaggerate the degree of flexibility in agricultural markets.

There is widespread belief, based on statistics of factor productivity (e.g. output per hectare), that CEE agriculture is inefficient. Several of the models described below assume that the gap between Western and CEE productivity will narrow as a result of privatisation and the reliance on price signals rather than central planning. This effect of reform is modeled by shifting out the supply functions by amounts which are consistent with the projected increase in efficiency. These projections are based on a comparison of average factor productivities in CEE and the West. Since the projections and the supply functions they alter are speculative, this method of accounting for increased efficiency can only provide an approximation.

In addition, a simple comparison between CEE and Western levels of average factor productivity exaggerates the extent of technical inefficiency in the CEE. Technical efficiency means that production is maximized for given inputs. In a recent survey, Murrell (1992) concludes that CEE and FSU agriculture was largely technically efficient. In a study of Polish State and private farms, Brada and King (1993) conclude that average technical efficiency of the two does not differ, although there is wider dispersion in efficiency levels for State farms. Hofler and Payne (1993) find evidence of technical inefficiency in State farms in Yugoslavia. There is stronger evidence of allocative inefficiency (the wrong inputs are being used, or are being used in the wrong mixes); in Poland, for example, State farms are oversupplied with fertilizer and machinery. Appropriate prices should improve allocative efficiency, which will shift out the supply functions. However, statistics on average factor productivity may be poor indicators of the extent of this improvement.

Cochrane (1990) estimates the production and trade effects of reform in Poland and Yugoslavia first under the assumption that the removal of price policies (the elimination of PSE's and CSE's) is not accompanied by efficiency gains. Since the net effect of these policies is to support producers (the PSE's are mostly positive), their removal leads to a large fall in production and an increase in imports. Price liberalization, without accompanying gains in efficiency, causes the agricultural sector to contract. Estimates of potential productivity gains were made by assuming that over a period of six or seven years it would be possible to close half of the gap between Polish and Western levels of efficiency, as estimated by the World Bank. This leads to supply shifters which range from 15% for corn and other coarse grains, 20% for the pork sector, and 30% for the poultry sector.

Price liberalization and efficiency gains together result in a large increase in pork production and decrease in consumption. The resulting increase in pork exports is sufficient to cause Poland to become a net agricultural exporter. Poland's comparative advantage within the agricultural sector is in pork production. However, this conclusion is based on PSEs which show that the pork sector was taxed in the late 1980s; updated calculations by the same author show a revised PSE for pork which is positive (although small). Had this revised data been used, the projected output-increase in the pork sector would have been smaller. Other

implications of the model are that Poland switches from exporting to importing beef, and increases imports of wheat, corn, and oilmeal.

In view of the current war in Yugoslavia, the predictions for that country can only be informative about longer run tendencies. Combined price liberalization and efficiency gains in Yugoslavia imply increases in meat production of 20%, leading to large exports. The expansion of livestock production and the decline in the consumer prices of grain leads to substantial increase in grain imports. Imports of oilseed and meal also increase. The combined effect of these changes is to reduce the value of agricultural imports to about 16% of its pre-reform level.

For both countries the removal of the price policies and the concomitant improvements in efficiency lead to aggregate welfare gains. This is mainly due to the decline in government expenditures, although consumers also gain. Despite the fact that the agricultural sector expands, producer welfare falls, as a result of the removal of transfers: an expanding agricultural sector does not necessarily imply an increase in returns to labor and capital employed there. For both countries, the model results are also consistent with the widely held view that reform of the agricultural sector will contribute to CEE's balance of payments.

Liefert et al.(undated) carry out a similar modelling exercise for the FSU. Their results are interesting both because of the importance of the FSU in agricultural trade, and as a source of comparison with CEE. Estimates of CSE's and PSE's indicate that consumers are subsidized; producers are slightly subsidized, although alternate assumptions about the exchange rate change those subsidies to small taxes.[8] Under the assumption of a relatively high exchange rate, liberalization leads to an increase in the agricultural trade deficit of over 50%, whereas with a lower rate the predicted deficit falls by 90%; in either case, the FSU remains an agricultural importer.

Corn imports remain high, but the region changes from an importer to an exporter of wheat. Aggregate grain imports decrease, and under some scenarios the FSU becomes a grain exporter. Aggregate grain production either falls or increases only slightly, depending on the assumed exchange rate. The change in trade flows is chiefly due to a fall in consumption caused by lower demand from a smaller livestock sector and a more efficient mix of feed. In the 1980's the FSU accounted for slightly less than a fifth of world grain trade; grain imports accounted for roughly a fifth of total grain consumption, and nearly a third of the FSU expenditures on agricultural imports. The potentially dramatic change in the grain sector would be important both for the world grain market and the FSU economy. The model predicts a rise in imports of soybean products, leading to a more efficient mixture of livestock feed. The authors estimate that meat production falls and consumption rises, leading to an increase in imports.

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[8] In this context "the exchange rate" refers to the number of dollars per unit of domestic currency during the time at which the PSE's and CSE's were calculated; it does not refer to the current or future exchange rate.

These results can be compared with Johnson's (1992) more informal, but transparent calculations. Reducing by one third the gap between livestock feeding productivity in the FSU and West Germany would have saved 20 million tons of grain, about 10% of production. Reduction in the waste in harvesting, storage, and transport could save an amount equal to 5% of production. A similar amount could be saved by improving seed varieties and germination rates; this would still leave the efficiency of seeding for wheat at a much lower level than in the US. Yields for forage crops could also be improved, reducing the need for grains. Taken together, these improvements account for well over 20% of production, or around 40 million tons in the late 1980s. This exceeds the level of imports by over 10 million tons. A 25% reduction of livestock consumption, following removal of consumer subsidies, would cause grain consumption to fall by a similar order of magnitude.

Both of these papers imply that reform in the FSU will lead to a large decline in grain imports, and possibly cause the region to become a grain exporter. In Johnson's view this change is attributed in roughly equal parts to increased availability due to less waste, and reduced demand due to a fall in livestock consumption. In Liefert et al. the second cause is dominant, since increased efficiency and lower subsidies have an offsetting effect on production levels. Liefert et al.'s high estimate for trade changes is of the same order of magnitude as a conservative interpretation of Johnson's data.[9] The reduction in FSU grain imports is likely to swamp whatever increase in demand may arise from reform in CEE.

Within the agricultural sector, the FSU has a comparative advantage in grains relative to livestock; the opposite holds in Poland. In both countries, reform is likely to decrease the deficit in the agricultural balance of trade. Although the relative change in trade flows may be larger in Poland, the absolute change will be much larger in the FSU.

These efforts to quantify the trade effects of economic reform imply an important policy message for the West, and particularly the EC. Reform in the CEE is seen as threatening Western agricultural interests; this has led to continued restrictions on agricultural trade. The magnitude of this threat, and even its existence, is uncertain, and is probably marginal compared to the adjustments that will be required by changes within the FSU. The potential for CEE agricultural reform to contribute to the economic development and political stability requires accommodation by the West, which to date has been tentative. For example, Winters (1992) notes that the Association Agreements between the EC and CEE seem designed as much to ease the adjustment needed in the EC as to exploit new trading opportunities. The West may be able to protect its agricultural markets from changes in the CEE, but not from changes in the FSU. A large importer like the FSU is able to act unilaterally by restricting imports; the expansion of CEE exports requires Western acquiescence. Since the West cannot avoid large adjustments to agricultural trade resulting from changes in the FSU, it has little to gain from avoiding the smaller adjustments caused

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[9] Johnson's estimates of amount of waste and of the potential for productivity increases may be high. Barkema et al. (1992) report that Russian crop yields are comparable to those in the West, and state that the main potential for improvement in the agricultural sector lies with improving marketing.

by changes in CEE. The political costs of attempting to avoid or delay those changes, by means of a restrictive trade policy, may be very great.

2. Effects of External Reform on CEE Agriculture

We turn to a review of attempts to quantify the effects on CEE of reform in the West. The models described assume that the West is willing to modify its trade flows, but without changing its domestic nominal rates of protection (the gap between domestic and world prices). This section describes the effects on CEE of liberalization of Western agricultural policies. The discussion includes the effects of: the Association Agreements; general lowering of price distortions in the West; current proposals before GATT; and bringing the EE-3 into CAP.

The structure of agricultural production and trade that existed before World War II is evidence of the extent to which post-War policies have influenced the evolution of the agricultural sector. Changing these policies should have a large effect on future development. Because of the importance of the EC as both an export and import market for CEE agriculture (discussed in section III), changes in the CAP are particularly relevant. During the 1920s and early 1930s the combined region of CEE and the FSU was a net agricultural exporter, supplying approximately 20% of Western European imports. In the post-WWII years the region was a net exporter of meat and live animals until the implementation of the CAP. The FSU became an importer of both grains and meat, and CEE was a net exporter of meat and importer of grains. Through 1970s CEE was a net agricultural importer from EC, and switched to being a net exporter during the 1980s. By the late 1980s the EC accounted for approximately 30% of Hungarian and Czechoslovakian agricultural exports and approximately 60% of Polish and Yugoslavian exports.

EC trade restrictions influenced the composition as well as the magnitude of trade. For example, the value of Polish exports to the EC of rapeseed and oil more than doubled over 1987 - 90 as exporters were able to take advantage of the liberal trade in that commodity. However, EC policies caused Polish exports of bacon to the UK to fall to less than 10% of their 1969 level. Current EC policies continue to restrict agricultural trade with CEE, by directly limiting quantities imported and by encouraging production within the EC.

Tangerman (1992) estimates the short term effect of the EC Association Agreements on agricultural trade for Poland, Czechoslovakia and Hungary (EE-3). He calculates the value to these countries of the agreements as the product of the "preference margin" (the difference between the MFN levies and the levies under the Association Agreements) and exports to the EC of various commodities. The level of exports is taken as the import quota where this exists, and in other cases is the 1990 level of exports. The calculated value of the Agreements, as a percentage of the value of total agricultural exports to the EC in 1990, is in the region of 3% - 5% in 1992. Since the quotas are scheduled to increase over time, this value should also increase. By 1996 it reaches 7% for Poland, 14% for Hungary, and 22% for CSFR.

Tangerman notes that these estimates exaggerate the probable benefits to EE-3 for two reasons. First, the numbers above involve the potential rent resulting from the Agreements, but a substantial percentage of that may be captured by the distributors in the EC rather than exporters in EE-3. Second, the calculations are based on EC support policies prior to the announced CAP reform of May 1992. That reform will reduce EC prices, causing the value of the preference margin to fall; this could reduce by more than half the value of preferential access. Thus, it seems unlikely that the Association Agreements will provide a major impetus to CEE agricultural development.

Koopman and Cochrane (1991) use a formal model to estimate the trade effects of a more ambitious reform in the West combined with reform in the East. As in the models described above, liberalization in the East is represented by removing domestic price supports and shifting out supply curves by an amount consistent with closing one third of the estimated gap between Western and Eastern productivity. If Western markets adjust, but price distortions are not changed, there is a negligible rise in net meat exports from the East, and a 25% decrease in Eastern grain imports. If, in addition to reform in the East, the EC removes its domestic distortions, this causes Eastern meat exports to increase by 75% and grain imports to fall by a further 25%. The incremental effect of liberalization in the rest of the world has a small effect on meat exports, and causes Eastern grain imports to fall to a third of the base level.

These relative magnitudes seem plausible. As described above, unilateral reform in the East would have a large effect on the grain market because of the importance of the FSU as an importer. A significant expansion of meat exports requires that the principal market, the EC, reduce its distortions. Since North America is a major grain exporter to the East, but is not a large import market for meat, its liberalization chiefly affects the grain market, but by a smaller amount than EC reform.

These results suggest that liberalization in the EC is more critical to the development of Eastern Agriculture than is liberalization in other OECD nations. This is broadly consistent with Collins and Rodrik's (1991) conclusions for general merchandise trade. Those authors predicted future trade flows on the basis of estimates of GNP growth in the East, the relation between GNP and trade, and a comparison of current and historical (inter-war) market shares of nations that were similar to CEE. However, their conclusion that the EC has a much greater potential for increased trade with the East than do North America and Asia, has been challenged by Wang and Winters (1992). Using a gravity model (in which trade flows are related to population, prosperity, and propinquity) those authors find that liberalization in the East leads to aggregate increases in trade comparable to Collins and Rodrik's estimates, but with a much more important role for non-EC regions. More extensive modelling efforts for agricultural trade may also suggest increased importance for the CEE of reform in North America.

The degree and form of liberalization of Western agricultural policies is uncertain, but they will not result in the elimination of price distortions. The eventual GATT agreement, if it occurs, is likely to resemble a more modest set of suggestions known as the Dunkel Proposal. The main features of the Proposal are that it decreases EC expenditures on export

subsidies by a third and decreases the volume of exports which benefit from those subsidies by a quarter. Internal support prices are to be reduced by a fifth. Quotas are to be converted to tariff equivalents and the average tariff reduced by a third, with tariffs for individual commodities reduced by at least 15%. Remaining import barriers are to allow a minimum access of 3% of consumption in 1993, increasing to 5% in 1999. Roningen (1992) uses a static multi-country, multi-crop model to compare the effects on agricultural markets of the Dunkel proposal and complete removal of EC agricultural support. He estimates that the Dunkel proposal has roughly one quarter the effect on world prices and EC supply as would complete liberalization.

The quantitative effects of this proposal have also been analyzed by CARD (1992) using a dynamic world commodity model. This analysis does not include Eastern reform. However, even neglecting those changes, the analysis is interesting for its predictions regarding world price and trade flows, which have direct implications for the East. CARD compares the outcome under the proposed reform with a base scenario which assumes no reform. The reform leads to a 6% increase of grain prices and a small decline in grain trade; however, there is a substantial reduction in EC grain exports due to the subsidy reductions. In the CARD analysis, US exports largely replace those from the EC, but this is because the analysis assumed that there was no change in Eastern import demand.

The models reviewed above provide a basis for comparing the magnitude of effects of Eastern and Western reform. CARD estimates that the Dunkel proposal causes EC exports of wheat and feed grains to fall by 6 million metric tons in 1993 and 13 million tons in 1998. Liefert et al.'s conservative estimate of the decrease in FSU import demand for grains is approximately 25 million tons; their high estimate is 40 million tons, which is of a similar order of magnitude to the changes implied by Johnson's calculations. The comparison therefor suggests that at least for the grains market, the type of reforms currently under consideration in the West will not be sufficient to offset the likely effects of liberalization in the East.

CARD estimates that the Dunkel proposal would also have substantial effects of the pork market, with price rising 6% over the no-reform scenario, and world exports doubling. The CEE is a major beneficiary of reforms for this commodity, since its pork exports increase by more than 10% even without domestic reform.

The material reviewed thus far suggests that both the Association Agreements and the type of Western reform currently discussed at the GATT negotiations are at best a partial response the changes taking place in the East. A more ambitious proposal considers integration of EE-3 (including their agricultural sectors) into the EC. If this does occur, it would almost surely not happen in this decade, and it would only take place after the CAP had been reformed. Despite its implausibility, it is interesting to estimate the effect of integration of EE-3 into the EC under current policies. These estimates cast a different light on the relative degree of protection of EC and EE-3 agriculture in the 1980s; they highlight the extent of adjustment required for EE-3 agriculture; and they illustrate one of the arguments for CAP reform.

Glecker et al. (1992) estimate what would have happened had the EE-3 been integrated into the EC in 1989. In this scenario integration implies that EE-3 adopts EC prices and enjoys productivity gains ranging from approximately 5% for corn, oilseeds and oilmeal to more than 10% for meat, wheat, coarse grains, and sugar. Adoption of EC prices causes significant increases in consumer prices in EE-3, relative to 1989 prices. Producer prices for most commodities increase, reflecting the fact that in the late 1980s producers of most commodities were more highly protected in the EC than in EE-3; however, for pork and poultry, producer prices fall by 30 and 17%, respectively.

The combination of productivity gains (which imply lower costs) and increases in output prices mean that producers of most commodities gain. However, the substantial fall in pork prices imply that pork producers would be worse off under CAP (even after incorporating an 11% productivity increase) than prior to 1989. Aggregate producer welfare in the EE-3 falls under this scenario. This result suggests that at least in a limited sense, producers in EE-3 were as highly, or even more highly protected than EC producers. The opposite conclusion was reached in examining aggregate producer support as measured by PSEs (section IV). Despite the lower rates of protection in EE-3 for most commodities, aggregate producer welfare would have been lower under the EC price regime even if this was accompanied by a sizeable fall in production costs. The result also indicates the importance of the pork sector, and the extent of producer adjustment that EE-3 reform entails. Since liberalization requires movement toward world prices, which are lower than EC prices, in the short and medium term it is not surprising that reform is painful for producers.

The simulation results do not, of course, imply that EE-3 producers would be worse off as part of CAP than outside it; the comparison in the experiment is with the pre-reform level of support, which is no longer a realistic alternative. Admission of the EE-3 to CAP would involve large transfers from the EC. The 1989 CAP budget for price support of the nine commodities included in Glecker et al.'s study was $3.6 billion. Inclusion of East Germany and EE-3, at the same level of support, nearly doubles this budget. The cost of including EE-3 is more than twice that of including only East Germany. Since these amounts include only the cost of price support policy, and not the cost of providing special assistance to impoverished regions, the true cost of including EE-3 in an unreformed CAP would be much larger.

In a recent study Tyers (1992) uses a dynamic multi-country model to estimate the effects of a combination of several types of changes: unilateral reform of the CAP, productivity growth in the East, and gradual accession of EE-3 to CAP. A reference scenario, which assumes that none of these changes take place, shows the ratio of production to consumption increasing in the OECD and decreasing in the East and developing nations. Unilateral reform of CAP, without productivity growth in the East or integration of EE-3 moderates this trend, but does not change its direction. World prices for most commodities rises (10% for wheat and 7% for ruminant meat); however, the price of non-ruminant meat (which includes pork) falls, as the decline in protection of other sectors causes producers to shift resources. Since pork is a crucial sector for EE-3 agriculture, this fall in price diminishes the net benefits EE-3 producers receive from unilateral EC reform.

The phased extension of CAP to EE-3 moderates or reverses the price rises which result from unilateral reform. In particular, by the midpoint of the integration process (the year 2000), the price of dairy products falls by more than 10%. This is due to an increase in dairy production in EE-3 resulting from an increase in the protection of that sector. Tyers estimates that unilateral reform of the CAP would reduce costs by $23 billion per year, but inclusion of EE-3 would lead to an increase in budget costs of about half that amount. (These amounts include only the costs of price support programs.)

Liberalization in the FSU partially offsets the decline in world dairy price, since dairy production in that region falls and imports increase. There are substantial declines in cereal consumption; wheat production increases by more than a quarter. The aggregate effect is to increase net exports from the East. Tyers calculates that without reform in the FSU, the ratio of production to consumption in the year 2000 ranges from .99 to 1.04, depending on assumed growth rates in productivity and income; that is, the region remains a small net importer or a small exporter. However, reform in the FSU causes the ratios to range from 1.11 to 1.23, indicating large exports. An alternate scenario, which assumes that the FSU pursues a protectionist policy similar to CAP, implies ratios which range from 1.25 to 1.4. These ratios indicate a much higher level of exports, and lower world prices. These results reinforce the conclusion that the net effects of reforms in the East and West are likely to be lower world prices for major commodities, and for grains a reduction or even reversal of trade flows.

Conclusion

We have provided a range of perspectives on CEE agriculture by assembling statistical data, descriptions of historical and current policies, a discussion of policy alternatives, and a review of estimates of the effects of policy reforms. Agriculture in CEE is a larger sector than in the wealthier countries in the West, in terms of share in the labour force, contribution to GDP, and share of consumers' budget. There is some, but certainly not conclusive evidence that the importance of agriculture is shrinking. Agriculture is also a significant component of CEE trade. The importance of Western markets increased during the 1980s, a process which will be accelerated by the disruption of trading relations among the formerly planned economies. Although the potential changes in levels of production and trade due to reform are considerable, these changes have not yet occurred. Western reluctance to liberalize agricultural trade could become a major impediment to the success of CEE reforms. There is also the danger that an interventionist agricultural policy will be adopted in CEE; this could hinder growth in CEE and ultimately damage their agricultural sectors. These two dangers are related. Western reform is more useful to CEE agriculture than is Western advice.

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