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Trade Liberalization in Yugoslavia and Poland

Nancy J. Cochrane

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Trade Liberalization in Yugoslavia and Poland. By Nancy J. Cochrane, Agriculture and Trade Analysis Division, Economic Research Service, U.S. Department of Agriculture. Staff Report No. AGES 9058.

Abstract

This study presents the author's estimates of producer and consumer subsidy equivalents (PSE's and CSE's) for Yugoslavia and Poland and uses the Static World Policy Simulation (SWOPSIM) framework developed at ERS to model the effects of trade liberalization (equated here with domestic policy reform) on agricultural production and trade in those two countries. PSE and CSE calculations for 1986, the base year used in the model, show that in that year both Yugoslavia and Poland subsidized producers on a level roughly equal to that in Western Europe. On the other hand, Poland also subsidized consumers quite heavily, while Yugoslavia taxed its consumers, generally to a greater extent than in Western Europe. SWOPSIM results suggest that the ongoing economic reforms in these countries, if successful, could dramatically alter current patterns of production and trade in both countries. Poland could become a significant net agricultural exporter, mainly the result of a large increase in pork exports. Yugoslavia could shift to a net importer of grains, but increased exports of meat and other products could bring it close to self-sufficiency in agricultural trade.

Keywords: Eastern Europe, Yugoslavia, Poland, trade liberalization, producer subsidy equivalents, consumer subsidy equivalents, SWOPSIM, agricultural trade, agricultural policy, economic reforms

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Trade Liberalization in Yugoslavia and Poland

Nancy J. Cochrane

Introduction

The question of the liberalization of world agricultural trade is an important item on the agenda of the latest round of multilateral trade negotiations begun in 1986 by the members of the General Agreement on Tariffs and Trade (GATT). These negotiations, known as the Uruguay Round, were the result of a growing recognition that a major cause of the falling commodity prices and stagnant world trade of the 1980's has been the complex array of interventionist agricultural policies pursued by the trading countries. These policies include tariff and nontariff trade barriers, price supports, and a variety of producer and consumer subsidies, all of which have insulated domestic markets from world market fluctuations. A major goal of the Uruguay Round has been an agreement on a multilateral reduction or elimination of these barriers.

This paper will analyze the possible effects of trade liberalization in Yugoslavia and Poland. Work in progress includes Hungary and Czechoslovakia, as well. Eastern Europe is of interest for several reasons. Five of the countries--Yugoslavia, Czechoslovakia, Poland, Hungary, and Romania--are members of GATT. Of the remaining three, only Albania still has no interest in GATT membership. Bulgaria has observer status and is seeking full membership and, with a new government in place, prospects for its membership should be improved. To date, there has been little discussion of GATT membership in the German Democratic Republic, but given the probability of eventual German reunification, this could cease to be an issue. In addition, most of the countries have seen their net exports of livestock products fall as a result of European Community (EC) import barriers and low world prices. Most of these countries have a strong interest in any negotiations that might result in the reduction or elimination of EC import barriers. East European livestock exports would also benefit from the increase in world prices that trade liberalization in the West is expected to produce.

Most important, all the countries (except Albania) are seriously pursuing some degree of market-type reforms. To varying degrees, all are attempting to reduce producer and consumer subsidies and align domestic prices with world levels. Yugoslavia and Poland have taken the most radical steps toward those goals. Both are suffering severe economic dislocations, which could result in a fall in agricultural output, particularly in Poland. However, the current situation should be viewed as the short-term result of these reforms. The key question to be addressed in this study is the longer term changes in agricultural production and trade which might be expected if the short-term

disruptions are effectively ironed out. Because the focus of this study is on the effects of policy reform in these two countries, it was assumed no liberalization occurred in the other regions of the world.

The policy reforms modeled in this study include the elimination of all price controls, an exchange rate set by the market, and the removal of all barriers to the free entry of imports. However, it seems highly unrealistic to assume that the governments of these countries could force producers and consumers to face world market prices without addressing the serious systemic problems which hamper productivity growth (the distorted input market, the monopsonistic purchasing system, the outdated infrastructure, and inadequate capital markets). Therefore, it was assumed that price reform would be accompanied by increases in productivity which could result from the resolution of these other problems. The results indicate that, for certain commodities, there will be increases in production and net exports despite a general decline in prices paid to producers.

Background

The current situation in both Yugoslavia and Poland can be viewed as the short-term result of the removal of subsidies and price controls. Both experienced high inflation in 1989 and, while both have now managed to bring their inflation to a halt, both are experiencing a fall in real incomes and a resulting drop in consumer demand. Furthermore, farmers in both countries are caught in a classic price scissors. The farmers are experiencing rising input prices, while lagging consumer demand holds down procurement prices. Poland is likely to see a fall in output in 1990. Yugoslavia will probably see some increase over 1988 and 1989, but only because of especially bad weather in those 2 previous years.

In both countries, many of the institutional barriers which insulate farmers from market forces and hamper productivity gains remain in place. Agriculture is dominated by small, fragmented private farms. Farms average 5 hectares in Poland and only 2.5 in Yugoslavia. Purchasing has traditionally been in the hands of state-owned food processing monopolies in Poland and large, vertically integrated, socialized kombinats in Yugoslavia. Both types of purchasing organizations have enjoyed monopsonistic power over the farmers. While there are reports in both countries of the emergence of private competition to these organizations, this has not yet occurred on a large scale. Furthermore, the production and supply of inputs is still in the hands of socialized monopolies, with the result that farmers still face high prices, limited supplies, and an inappropriate assortment of inputs. In both countries, recent policy has aimed at improving conditions for the private farmers and removing these barriers to productivity growth. But the success of such measures can be evaluated only after a longer period of time.

As long as these barriers are in place, the ultimate effect of removal of all support to producers will be a large drop in producer prices, which will lead to sharp declines in production and possibly a significant exodus off the farms into the cities. A more realistic long-term scenario would include both producer price reform and simultaneous economywide reforms which eliminate the systemic constraints of central planning and lead to productivity gains. With the productivity increases that might occur following effective reform, farmers could well find that they could achieve greater profits even with lower producer prices. Economywide reform could still result in the exit of a

significant number of farmers, as market forces will probably encourage the consolidation of farms and the retirement of some of the smaller farmers. However, under the current system of distorted input and output prices, the extent and pattern of exit could be wrong, with some of the more efficient farmers being forced out.

This study models this complete reform scenario. The model was thus designed to simulate the combined effects of the removal of all price support (or controls) and the productivity gains that could result from economywide reform.

The Model

The model used to test the effects of trade liberalization was built using the Economic Research Service SWOPSIM (Static World Policy SIMulation) modelling framework.[1] This is a spreadsheet-based framework used to create a static, global, net trade model for agriculture. It consists of a set of constant elasticity supply and demand equations that use synthetic own- and cross-price elasticities. For each country i and commodity j, supply and demand are generally defined as:

$$S_{ij} = g_{ij}(PP_{ij}, PP_{ik})$$
$$D_{if} = f_{ij}(PC_{if}, PC_{ij})$$

where PP and PC are the domestic prices faced by producers and consumers, respectively. P_{ik} represents relevant cross-product prices. The domestic producer and consumer prices which are entered into the model (PP and PC) are calculated as the sum of the market price and per unit subsidies (discussed in detail below). That is:

$$PP_{ij} = TRDVAL + PPW_{ij} - PMRG_{ij} + (PWj*XR)^{PTEij}$$

where:

TRDVAL = the value of the domestic commodity on world markets
PW_j = change in world price for commodity j
PTE_{ij} = price transmission elasticity
XR = exchange rate
PPW_{ij} = producer price wedge in country i for commodity j
$PMRG_{ij}$ = producer price margin that reflects any difference between PP_{ij} annd PW_j not captured by the price wedge

Similarly,

$$PC_{ij} = TRDVAL + CPW_{ij} - CMRG_{ij} + (PWj*XR)^{PTEij}$$

where:

CPW_{ij} = consumer price wedge in country i for commodity j

---

[1]This model was first described in Vernon O. Roningen and Praveen Dixit, A Static World Policy Simulation (SWOPSIM) Modeling Framework, Staff Report AGES860625, U.S. Dept. Agr., Econ. Res. Serv., 1986.

$CMRG_{ij}$ = consumer price margin that reflects any difference between PC_{ij} and PW_j not captured by the price wedge

Net trade is calculated as the difference between supply and demand:

$$T_{ij} = S_{ij} - D_{ij}$$

The model's world market-clearing condition is that world net trade for each commodity equals zero. All the supply and demand equations are initialized on base year price and quantity data; for this study the base year is 1986. That is, given the elasticity matrices, equations are fit to pass through the base year price and quantity data. The model solves for a new equilibrium only after receiving a shock to the base year equilibrium. This shock could consist of a price change, a demand or supply shift, or a combination of the two. The model solution represents an equilibrium that might be expected about 6 years after the shocks are implemented, assuming no other changes occur.

The SWOPSIM framework is designed to ensure that own- and cross-price elasticities are selected in conformance with symmetry conditions and multi-output production theory constraints for joint products and input/output relationships. These constraints are important in the dairy sector, where butter and skim milk are joint products produced from fluid milk and cheese is another product that depends on raw milk as an input. The soybean complex is another area where such joint product relationships must be taken into account.[2] The feed-demand equations include the quantity supplied of relevant livestock products and are derived from historical feed shares, which enter the cross-price elasticity calculations. These feed shares can be altered to reflect the improved feeding efficiency that might occur under a reform scenario. The own- and cross-price elasticities used in the model are in tables 1 and 2.

In using SWOPSIM to simulate the domestic reform in Poland and Yugoslavia, this author imposed two shocks: the removal of the wedges between domestic producer and consumer prices and world market prices and an outward shift of the supply curve to simulate the productivity gains that might be expected.

Applying SWOPSIM to a Centrally Planned Economy

The model assumes perfectly competitive world markets: that price is the sole determinant of trade, all countries are price takers, and all markets clear. One could question the applicability of some of these assumptions to the centrally planned economies of Eastern Europe, particularly in Poland which, in 1986, was characterized by disequilibrium in several markets. However, there is convincing evidence that the foreign trade decisions made by central planners were price driven. Previous work by this author shows Polish and

[2]For a detailed discussion, see Stephen L. Haley, Joint Products in the SWOPSIM Modeling Framework, Staff Report AGES881024, U.S. Dept. Agr., Econ. Res. Serv., 1988.

Table 1--Poland: Supply and demand elasticities used in model

Commodity	Beef and veal	Pork	Lamb	Poultry meat	Eggs	Milk	Butter	Cheese	Dairy powder	Wheat	Corn	Other coarse grains	Rice	Soy-beans	Soy-meal	Soy-oil	Other seeds	Other meals	Other oils	Cotton	Sugar	Tobac-co
Supply:																						
Beef and veal	0.70	-0.50		-0.03		-0.10				-0.01		-0.05			-0.01							
Pork	-0.10	0.38								-0.02		-0.20										
Lamb			0.40							-0.12		-0.17			-0.01			-0.01				
Poultry meat	-0.07			0.50						-0.02		-0.14			-0.04			-0.03				
Eggs					0.20					-0.01		-0.04			-0.01			-0.01				
Milk	-0.05					0.30				-0.01		-0.02			-0.01			-0.01				
Butter						-0.49	0.40	-0.26	0.40													
Cheese						0.63	-0.49	0.40	-0.49													
Dairy powder						-0.95	0.74	-0.48	0.74													
Wheat										0.60		-0.50					-0.01					
Corn											0.05	-0.05										
Other coarse grains										-0.14		0.19		-0.01			-0.02					
Rice											-0.11		0.20									
Soybeans												-0.09		0.20			-0.05					
Soymeal														-0.23	0.20	0.08						
Soyoil														-0.23	0.20	0.08						
Other seeds										-0.02		-0.08			0.30				0.19	0.24	0.30	
Other meals																	-0.42	0.20	0.27			
Other oils																	-0.42	0.20	0.27			
Cotton																				0.15		
Sugar																					0.15	
Tobacco																						0.10
Demand:																						
Beef and veal	-0.40	0.20																				
Pork	0.08	-0.30		0.02																		
Lamb			-0.10																			
Poultry meat		0.16	0.00	-0.30																		
Eggs					-0.20																	
Milk						-0.15	0.09	-0.06	0.10													
Butter							-0.30															
Cheese								-0.20														
Dairy powder									-0.40													
Wheat										-0.05	0.01	0.04										
Corn										0.10	-0.30	0.09			0.01							
Other coarse grains										0.02		-0.25			0.01							
Rice													-0.20									
Soybeans														-0.26	0.14	0.06	0.05					
Soymeal												0.07			-0.25			0.10				
Soyoil																-0.20			0.10			
Other seeds																-0.33	0.12	0.16				
Other meals															0.14			-0.50				
Other oils																0.02			-0.30			
Cotton																				-0.15		
Sugar																					-0.20	
Tobacco																						-0.20

Table 2--Yugoslavia: Supply and demand elasticities used in model

Commodity	Beef and veal	Pork	Lamb	Poultry meat	Eggs	Milk	Butter	Cheese	Dairy powder	Wheat	Corn	Other coarse grains	Rice	Soy-beans	Soy-meal	Soy-oil	Other seeds	Other meals	Other oils	Cotton	Sugar	Tobac-co
Supply:																						
Beef and veal	0.25	-0.05		-0.01		-0.10				-0.01	-0.04											
Pork	-0.03	0.40								-0.07	-0.18	-0.01										
Lamb			0.30							-0.06	-0.15	-0.01										
Poultry meat	-0.01			0.50						-0.02	-0.13	-0.01			-0.01							
Eggs					0.20					-0.04	-0.09				-0.01							
Milk	-0.06					0.35				-0.02	-0.05				-0.01							
Butter						-0.65	0.48	-0.26	0.48													
Cheese						-0.29	-0.08	0.50	-0.08													
Dairy powder						-1.58	1.11	-0.60	1.11													
Wheat										0.50	-0.10	-0.01					-0.01					
Corn										-0.06	0.40	-0.01										
Other coarse grains										-0.05	-0.09	0.40		-0.01			-0.02					
Rice											-0.05	0.00	0.30									
Soybeans												-0.01		0.30			-0.20					
Soymeal														-0.40	0.30	0.15						
Soyoil														-0.40	0.30	0.15						
Other seeds										-0.05		-0.01		-0.10			0.15					
Other meals																	-0.35	0.10	0.30			
Other oils																	-0.35	0.10	0.30			
Cotton																				0.15		
Sugar																					0.15	0.00
Tobacco																						0.10
Demand:																						
Beef and veal	-0.60	0.30	0.00	0.05																		
Pork	0.16	-0.50	0.00	0.10																		
Lamb			-0.20																			
Poultry meat	0.10	0.37	0.00	-0.50																		
Eggs					-0.20																	
Milk						-0.08	0.01	0.01	0.01													
Butter							-0.40															
Cheese								-0.50														
Dairy powder									-0.40													
Wheat										-0.20	0.02	0.01										
Corn										0.02	-0.40	0.01			0.01							
Other coarse grains										0.10	0.12	-0.30			0.01							
Rice													-0.20									
Soybeans														-0.26	0.14	0.07	0.03					
Soymeal											0.12	0.01			-0.25		0.05					
Soyoil																-0.40	0.00	0.20				
Other seeds														0.01			-0.17	0.03	0.08			
Other meals															0.13			-0.25				
Other oils																0.02			-0.30			
Cotton																				-0.15		
Sugar																					-0.15	
Tobacco																						-0.15

Yugoslav import demand to be elastic.[3] Furthermore, there is ample evidence that Polish and Yugoslav farmers, being largely private, make planting decisions in response to movements in relative prices.

Also, being a partial equilibrium model, the model does not incorporate all of the potentially important cross-sectoral effects of reform. The model implicitly assumes that any changes in resource use entailed by agricultural reform are unconstrained (that is, perfectly elastic). The assumption of perfectly elastic input markets could be a serious problem in the case of Poland, since the bottlenecks in Polish input supplies are notorious. While Yugoslavia is not characterized so much by input shortages, the supply is also controlled by a monopoly which maintains higher-than-world prices. The incorporation of supply shifts into the model was an attempt to address that shortcoming (more discussion below). Given the relatively large share of the agricultural sector in these countries' GDP's, capturing the cross effects with other sectors of the economy would be useful, but these effects are not examined in this study.

Producer and Consumer Subsidies in Yugoslav and Polish Agriculture

The support measures, or price wedges, entered into the model consist of producer and consumer subsidy equivalents (PSE's and CSE's) calculated for each commodity. The PSE is defined as the "level of subsidy that would be necessary to compensate producers (in terms of income) for the removal of government programs affecting that commodity."[4] The CSE is defined analogously as the level of subsidy needed to compensate consumers for the removal of government programs. PSE's and CSE's can be either positive or negative. A positive PSE/CSE constitutes a subsidy, while a negative PSE/CSE is a tax. The PSE/CSE framework is under consideration for use by negotiators in the Uruguay Round because it provides a single measure of all government policies affecting a given commodity and enables negotiators to make fairly meaningful cross-country comparisons of government support provided to agriculture.

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[3]Nancy J. Cochrane, Hard Currency Constraints and East European Grain Imports, Staff Report AGES880125, U.S. Dept. Agr., Econ. Res. Serv., 1988. Some of the demand elasticities entered into SWOPSIM for the current study were derived from the import demand elasticities estimated in the referenced report. These elasticities, however, represent the planners' demand curve, and it is quite likely that the actual consumers' demand curve is more elastic than the planners'. There have been attempts to estimate the true consumers' demand functions: Josef Brada and Arthur King, "A Disequilibrium Approach to Modelling Foreign Trade in Centrally Planned Economies," Ch. 11 in Christopher Davis and Wojciech Charemza, eds., Disequilibrium and Shortage in Centrally Planned Economies, London: Chapman-Hall, 1989. Koopman, Cook, and Liefert in a forthcoming ERS Staff Report estimate the true consumers' demand function for the USSR for use in SWOPSIM. Future work on Poland will experiment with different elasticities, but for this work, consumer demand elasticities were based on the planners' demand curve.

[4]See Government Intervention in Agriculture: Measurement, Evaluation, and Implications for Trade Negotiations. FAER-229, U.S. Dept. Agr., Econ. Res. Serv., 1987.

The PSE's and CSE's described below are measures of the policies which were in effect in 1986, the base year of the model. As of 1990, many of these policies have been liberalized or dismantled. In 1986, producer subsidies fell into four basic categories: procurement policies, border intervention measures, input subsidies, and other services paid from the State budget. Consumer subsidies included border intervention measures and payments from the budget to food processors to cover the gap between the relatively high prices they had to pay to agricultural producers and the low wholesale prices they were allowed to charge. These policies are briefly described below.

Border Intervention

In order to conserve foreign exchange, Yugoslavia and Poland had erected a variety of barriers to agricultural imports. Both countries imposed tariffs on imports, but these for the most part were not that high and did not form much of an impediment to trade. More important were the nontariff barriers that had been put in place, discussed below for each country.

Poland

In 1986, virtually all foreign trade in Poland was carried out by specialized foreign trade organizations (FTO's) under the Ministry of Foreign Trade. Each FTO specialized in one line of products--for example, all grain trade was carried out by the FTO Rolimpex--and had a monopoly over those products. Export and import volumes and foreign exchange allocations were subject to central planning. With the reforms that began in the early 1980's, an increasing number of production enterprises were licensed to engage directly in foreign trade without going through an FTO. Furthermore, most exporters were allowed to retain a certain portion of their foreign exchange earnings, which they could use to import anything they needed. However, most agricultural commodities were identified as basic or strategic, so agricultural trade was still being carried out by a handful of FTO's, and most were still subject to central planning.

Yugoslavia

Most trade in Yugoslavia was also carried out by FTO's, but there were hundreds of such organizations, and they competed openly with each other. Nevertheless, there were a number of tariff and nontariff barriers which prevented the free flow of trade. Tariffs on agricultural goods were usually 5-15 percent, but imports were also subject to a variety of "equalization taxes" (intended to offset the difference between border and domestic prices) and other charges. Total charges typically came to 30-40 percent and posed a significant obstacle to imports.

But the nontariff barriers were at least equally important. Many imports, and particularly agricultural imports, were subject to varying degrees of restrictions or quota. According to the foreign exchange legislation passed in 1986, imported commodities were classified by four categories:

> Free. These commodities could be imported with no restrictions. An enterprise could purchase as much foreign exchange as it wanted for these imports, limited only by the foreign exchange reserves of the central bank and the firm's dinar reserves.

Conditionally free. For these commodities, foreign exchange was allocated according to enterprises' import rights, which were awarded on the basis of either need or the previous year's export performance.

Under quota. Physical quotas were set by the federal government and allocated among firms desiring to import.

Under license. This system covered only a few products, such as sugar, cocoa, coffee, and narcotics, which were covered by international agreements.

The mechanism used to administer the quota was government allocation of foreign exchange. The Foreign Exchange Legislation of 1986 required exporters to turn over foreign exchange receipts to the central bank in exchange for dinars. In turn, would-be importers had to apply for an allocation of foreign exchange, which was determined in accordance with the above conditions. The exchange rate was set by the government, but the government at that time kept the rate relatively close to the market-clearing rate (as evidenced by the small premium in the black market) through continual devaluations of the dinar.

In 1986, most raw agricultural products were under quota. Since that year, more and more products have been shifted into the free category. The hope of the authorities was that a realistic exchange rate would be sufficient to keep imports under control. In fact, by 1989, one of the strongest factors holding back imports was the poor dinar liquidity of most enterprises, not government limits on foreign exchange.

With the reforms introduced at the beginning of 1990, the Yugoslav Government issued a new, fully convertible, dinar pegged at 7 dinars to the Deutsche mark, freed up most prices, and eliminated most nontariff barriers to imports. Even so, all bulk commodities except oilseeds remained under quota in 1990.

Procurement Policies

Overall, the effect of the border measures in both Yugoslavia and Poland was to restrict imports, thus constraining the domestic supply and keeping producer prices above world market prices. However, procurement policies in effect in both countries in 1986 tended to dampen that upward pressure on producer prices. These procurement policies tended to hold producer prices below the level that would have been set by the domestic market given the existing border measures.

Poland

Prices paid to agricultural producers were for the most part fixed by the government, and most production sold by both private and socialized producers was purchased by state organizations at these state-set prices. Throughout most of Poland's postwar history, these procurement prices were set very low, generally far below world levels. During the 1980's, however, in attempts to raise profitability for producers, the government granted large nominal increases in procurement prices, such that by 1986, most prices were well above world levels. Nevertheless, producers felt they were being taxed. Procurement was almost entirely in the hands of a limited number of state-run food processing monopolies, which took advantage of their monopsonistic relationship to the farmers and kept state procurement prices below the prices

prevailing on the small domestic, free market. Furthermore, Poland's government had allowed prices of industrial inputs to rise faster than agricultural commodities, and in many cases official producer prices were not sufficient to cover the escalating production costs facing farmers.

Yugoslavia

Although Yugoslavia's system of socially owned, worker-managed enterprises was quite different from the state-run enterprises of Poland, the effect of Yugoslavia's procurement system on producer prices was the same as in Poland. Purchasing in Yugoslavia was largely in the hands of some 2,000 vertically integrated, socialized kombinats. These kombinats were involved in every stage of food production from crop and livestock production to processing to distribution and retailing. However, despite the large number of these organizations, there was little competition among them. Barriers to the entry of new firms were formidable, and the existing kombinats had effectively divided up the territory in Yugoslavia such that for the most part there was only one operating in any given region.[5] Farmers usually found there was only one organization to which they can sell; they could sell outside their immediate area only with the permission of the organization operating in that area.[6]

The Yugoslav Government set minimum, or protective prices, for most agricultural commodities, and the republic governments often guaranteed premia over and above those minimum prices. The actual prices paid to the farmers were negotiated with the purchasing organization and often rose above the protective prices. However, because of the monopsonistic nature of the purchasing system, these prices tended not to rise to the levels that they would have had there been competition.

In both Poland and Yugoslavia, there was a domestic, free market for agricultural commodities, where farmers could sell their output directly at market-set prices, which were usually higher than the prices paid by the socialized purchasing organizations. However, the amounts traded at free-market prices were very small. There were two main reasons for the small volume of free-market sales. For one thing, Polish and Yugoslav farmers, although mainly private, were given very strong inducements to sell to the State purchasing organizations. Access to inputs and credit was very often limited to those farmers who signed delivery contracts with these organizations. In addition, private middlemen were illegal in both countries until 1989, so the farmers could sell only as much as they could physically transport to the market. This transport was often by horse cart. The state thereby effectively forced farmers to be both farmer and marketer if they wanted to sell on the domestic free market. Many farmers apparently did not consider the returns from free-market sales to be sufficient to cover the required marketing costs.

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[5]For further discussion of this phenomenon, see Nancy J. Cochrane, "Republic and Provincial Barriers in Yugoslav Agricultural Marketing," presented at the annual meetings of the American Association for the Advancement of Slavic Studies, Honolulu, HI, Nov. 1988.

[6]Ekonomska Politika, Belgrade, Apr. 20, 1987.

Input subsidies

By 1986, in both countries, the prices of industrial inputs had risen much faster than agricultural producer prices. To partially alleviate the situation, both governments subsidized the price (themselves set to cover average production costs) of fertilizers, plant protection agents, and seed. Poland also subsidized fuel prices, while Yugoslavia reduced the taxes paid on fuel for socialized farms and private farmers who signed contracts with socialized organizations. In addition, both governments provided credit to socialized farms at interest rates below the official rate.[7] Poland's input subsidies are detailed in table 3 (similar data are unobtainable for Yugoslavia).

Table 3--Subsidies paid from the Polish budget for agricultural inputs

Subsidy	1983	1984	1985	1986	1987
			Million current zloty		
Total input subsidies to agriculture	30,312	55,000	77,285	130,907	174,710
Feed	5,171	18,010	28,947	45,045	63,804
Fertilizers	23,290	33,363	45,407	79,880	100,380
Fuel	451	69	111	0	819
Seed	286	1,559	0	0	0
Plant protection	1,114	1,999	2,820	5,982	9,707
Total crop subsidies	25,141	36,990	48,338	85,862	110,906
Credit subsidies	n.a.	n.a.	23,921	24,426	22,619
			Million constant 1980 zloty[1]		
Total input subsidies to agriculture	10,070	15,942	19,467	28,031	29,865
Feed	1,718	5,220	7,291	9,646	10,907
Fertilizers	7,738	9,670	11,438	17,105	17,159
Fuel	150	20	28	0	140
Seed	95	452	0	0	0
Plant protection	370	579	710	1,281	1,659
Total crop subsidies	8,352	10,722	12,176	18,386	18,958
Credit subsidies	n.a.	n.a.	6,025	5,230	3,866

n.a. = Not available.
[1]Deflated by Poland's consumer price index.

Source: Rocznik statystyczny, Warsaw, 1986 and 1988.

[7]During Yugoslavia's period of hyperinflation, the positive impact of these interest subsidies was virtually wiped out. Interest rates were continually adjusted in keeping with inflation, placing a heavy burden on the enterprises. The interest subsidies were periodically adjusted to reflect these rises, but did not compensate for the full rise in rates.

Consumer Subsidies

The governments of both Yugoslavia and Poland have until very recently sought to maintain low and stable food prices for the population. The Polish government maintained controls on the state retail prices of virtually all basic food commodities until August 1, 1989. Yugoslavia maintained maximum wholesale prices for a few strategic commodities until January 1990, when all controls were removed. In both countries, large subsidies were needed to ensure a profit to food processors caught between the low, state-controlled wholesale prices and the high prices paid to producers.

Poland

The Polish Government paid subsidies to processors of grain products, dairy products, meat, vegetable oil, sugar, and fish (table 4). These subsidies were not uniform across all producers of a given commodity, but were determined individually for each enterprise on the basis of its production costs. Total consumer subsidies in 1986 came to 403 billion zloty ($2.3 billion at the official exchange rate in effect in 1986). This amount was equivalent to 16 percent of the value of food consumption in that year, excluding alcoholic beverages. These subsidies rose in real terms through 1987 (the last available year of data).

Table 4--Subsidies paid to the Polish food industry

Subsidy	1983	1984	1985	1986	1987
			Million current zloty		
Food subsidies	231,539	235,701	310,244	401,297	567,934
Meat	39,291	36,659	61,656	87,502	140,822
Dairy products	97,678	105,450	132,794	187,391	235,606
Cereal products	74,451	73,592	77,442	83,371	149,862
Sugar	8,119	6,545	7,686	453	0
Fish and fish products	7,064	6,066	7,888	9,808	10,184
Edible oils	4,936	7,389	15,400	23,431	30,564
			Million constant 1980 zloty[1]		
Food subsidies	76,923	68,319	76,289	83,931	96,930
Meat	13,053	10,626	15,530	18,737	24,072
Dairy products	32,451	30,565	33,449	40,127	40,275
Cereal products	24,735	21,331	19,507	17,852	25,617
Sugar	2,697	1,897	1,936	97	0
Fish and fish products	2,347	1,758	1,987	2,100	1,741
Edible oils	1,640	2,142	3,879	5,017	5,225

[1]Deflated by Poland's consumer price index.

Source: Rocznik statystyczny, Warsaw, 1986 and 1988.

Yugoslavia

In the latter half of the 1980's, Yugoslavia was attempting to reduce controls on food, but periodically felt compelled to reinstate controls. In 1985, Yugoslavia set maximum wholesale and retail prices only for sugar, vegetable oil, wheat flour, and bread. Meat prices were liberalized in that year. In 1986, maximum prices remained in effect for only flour and vegetable oil, although enterprises wishing to raise prices for meat and sugar were supposed to provide justification before doing so. However, in 1987, in an attempt to dampen the effects of Yugoslavia's accelerating inflation, federal authorities reimposed maximum wholesale and retail prices on sugar, milk, meat, and bread.

To compensate processors for the losses entailed by these wholesale price controls, the Yugoslav Government paid subsidies to flour mills and other food processors. Information on these subsidies is very sketchy, but it appears that they were mainly in the form of low-interest loans for the purchase of raw agricultural commodities (although the interest rates were still adjusted monthly for inflation). In 1987, interest subsidies to food processors came to 55 billion dinars ($122 million at the exchange rate in effect in that year). These subsidies were on a much smaller scale than Poland's, and the result, as will become clear in the following section, is that Yugoslav consumers paid most of the cost of the subsidies going to producers.

PSE and CSE Calculations

The methodology used to estimate Poland and Yugoslavia's PSE's and CSE's is detailed in the appendix. In brief, the effects of procurement policies and border measures were measured jointly by calculating the gap between the domestic producer or consumer price and the trade price of a given commodity. Polish input subsidies were derived from published budget data. Input subsidies for Yugoslavia were calculated from information on fertilizer subsidies provided by the U.S. Agricultural Counsellor in Belgrade. Tables 5-6 are summary tables of Yugoslav and Polish CSE's and PSE's, expressed as a percentage of the total value of consumption or production. Tables showing more detailed calculations are in the appendix.

Support to Producers

In 1986, both Yugoslavia and Poland subsidized the producers of most commodities. The exceptions were pork and dairy products in Poland, producers of which were heavily taxed in the later recent years. In all cases, the bulk of the PSE's were the result of border and procurement measures. Input subsidies for the most part did not exceed 5 percent of the value of production. The PSE's varied greatly from year to year, but this variation resulted mostly from fluctuations in world prices. Domestic prices tended to rise with the domestic inflation rate, independent of changes in world prices. While these producer subsidies seem substantial, the reader should be aware that these are on a par with many other countries. For example, in 1986 the European Community PSE for Durum wheat came to 52 percent of the value of production, which is about the same as for Poland. In the United States, this value was 63 percent in the same year; in Japan, it was 103 percent. Furthermore, subsidies paid to Polish producers did not have the same effect of stimulating supply that they do in the EC. Polish farmers had a much less favorable operating environment than EC producers, which prevented the

Table 5--Producer subsidies as a percentage of production

Commodity	1983	1984	1985	1986	1987
			Percent		
Poland:					
Beef	3	26	33	36	n.a.
Pork	17	53	16	-52	-122
Poultry	52	51	35	30	11
Eggs	63	51	22	24	23
Milk	-22	-10	-11	-25	n.a.
Wheat	58	46	38	54	41
Corn	30	2	24	33	n.a.
Barley	60	44	48	70	58
Rye	40	30	35	49	37
Sugar	29	42	41	29	11
Average for all commodities	22	28	33	22	-30
Yugoslavia:					
Beef	57	46	55	68	53
Pork	60	54	48	40	5
Poultry	67	58	61	61	35
Eggs	53	42	36	36	24
Milk	38	33	42	59	33
Wheat	37	33	35	53	54
Corn	38	16	24	39	54
Barley	30	2	10	3	25
Soybeans	37	24	46	59	41
Sunflowerseed	36	14	15	16	8
Sugar	21	40	55	62	17
Average for all commodities	47	35	41	51	37

n.a. = Not available.

Source: Author's calculations from official government data.

positive supply response that could be observed in the EC. As a result of the state monopoly on input markets, farmers in Poland faced sharply higher input prices, along with uncertain supplies. They also had to contend with a much poorer infrastructure and a government bureaucracy which had traditionally favored socialized farms.

Furthermore, the PSE's detailed here were estimated using the official exchange rate. This is a serious problem for Poland. The black market exchange rate was close to five times the official rate in 1986. If a more realistic exchange rate were used, Polish PSE's would turn out to be considerably lower, quite possibly even negative. The exchange rate is not such a serious problem for Yugoslavia. In 1986, the dinar was being rapidly devalued in line with the inflation rate, and most Yugoslav economists seem to feel that the exchange rate in that year was fairly close to a market rate.

The black market exchange rate was generally only 20-30 percent above the official.

Support to Consumers

There are two components to the CSE: the effect of border intervention measures and budgetary payments to processors. In both Yugoslavia and Poland, the effect of the border intervention policies put upward pressure on consumer prices. However, both governments paid subsidies to food processors to dampen that effect. The difference between the two countries was that Polish consumers paid below-world prices for most food items, while Yugoslav consumers remained taxed even after government subsidies.

In Poland, despite the large number of commodities which were taxed, net subsidies to consumers were positive because of the extremely large, positive subsidies to the consumption of wheat, pork, poultry, and milk. The zloty value of these subsidies was far greater than the value of the combined tax on the other commodities. It is because of the huge subsidies paid on grain

Table 6--Consumer subsidies as a percentage of consumption

Commodity	1983	1984	1985	1986	1987
			Percent		
Poland:					
Beef	7	-17	-22	-21	n.a.
Pork	-12	-8	-6	71	140
Poultry	-31	-29	-10	2	34
Eggs	-63	-53	-43	-27	-25
Milk	77	55	67	121	255
Wheat	-8	7	12	6	29
Vegetable oil	-56	-25	-26	-51	-40
Sugar	-17	-34	-30	-25	-39
Average for all commodities	8	1	6	40	86
Yugoslavia:					
Beef	-8	12	-15	-24	-40
Pork	-55	-51	-53	-45	-66
Eggs	-56	-45	-10	-39	-29
Milk	-34	-30	-43	-58	-32
Wheat	-30	-26	-29	-43	-34
Corn	-39	-15	-25	-46	n.a.
Barley	-24	-8	-10	16	n.a.
Vegetable oil	-57	-26	-44	-71	-71
Sugar	-50	-56	-69	-75	-53
Average for all commodities	-39	-26	-38	-54	n.a.

n.a. = Not available.

Source: Author's calculations from official government data.

products, meat, and milk that the subsidies paid out of the Polish budget were so much greater than those in Yugoslavia.

Yugoslavia's tax on consumers tended to be higher than in most other countries. In 1986, the tax on wheat consumers, for example, came to 43 percent of the value of consumption in Yugoslavia, compared with 39 percent in the EC, 37 percent in Japan, and only 9 percent in the United States. Poland, despite the publicity given to its consumer subsidies, subsidized its consumers considerably less than the Soviet Union and in fact taxed the consumption of several commodities at rates comparable with the EC.[8] Once again, however, these CSE's were calculated using the official exchange rate. With a more realistic exchange rate, these subsidies would have been very large, indeed.

Estimating Productivity Shifts

Initial SWOPSIM runs involved simply removing the price wedges and solving for a new equilibrium at the new, unsupported prices. However, the results showed drastic declines in production and a huge surge in imports. The reason was the assumption of no changes in input markets. Under the scenario originally tested, Polish and Yugoslav farmers were suddenly faced with sharply lower prices for their output, but were constrained by the same barriers to productivity gains that they experienced in 1986. Farmers could barely make a profit under the existing price structure; confronted with what was for some commodities a 40-percent price cut, many farmers would decrease or even halt production.

Within the SWOPSIM framework, there were two ways to simulate a more realistic scenario. One would have been to calculate the "tax" on producers that resulted from the excessive production costs incurred because of the inefficiency of the system. It is possible that this tax would have exceeded the positive subsidies, so that on net, the price wedge entered into the model would have been negative. Alternatively, a supply shifter could be entered into the model. That approach imposes an outward shift in the supply curve on the assumption that with a more rational input market and an improved infrastructure, farmers would find that they could produce more output at any given price.

The second approach was taken for this study. Table 7 shows the productivity increases assumed to be possible for each commodity. The assumption is that, after reform, wheat yields, for example, will be 20 percent higher; feeding efficiency in the hog sector will improve by 20 percent, etc.

The choice of supply shifters for the grains was based on a comparison of Polish and Yugoslav yields with selected West European yields during the 1980's. The assumption was that in the 6- to 7-year time horizon projected by the model, the removal of these barriers to productivity would enable Polish and Yugoslav farmers to close the gap between their yields and those of Western Europe by about 50 percent. A shifter was not entered for Polish corn because Poland's corn yields are already on a par with Western yields. And, because corn is a small crop in Poland, further productivity gains seemed

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[8]As calculated by Koopman, Liefert, and Cook (U.S. Dept. Agr., Econ. Res. Serv.) for the Soviet Union.

Table 7--Supply shifters entered into SWOPSIM

Commodity	Shifter
	Percent
Beef	20
Pork	20
Mutton and lamb	15
Poultry meat	30
Eggs	10
Milk	19
Wheat	25
Corn	15
Other coarse grains	17

unlikely. Likewise, no shifter was introduced for soybeans or other oilseeds on the assumption that Poland and Yugoslavia have about reached their capacity.

The productivity gains entered into the livestock sector were based on a World Bank statement that the Polish hog sector was about 30 percent less efficient than "optimal." For lack of more specific information, this statement was assumed to hold true for Yugoslavia as well. Again, it seemed unlikely that efficiency would rise completely to its optimal level in 6-7 years, so a gain of 20 percent was assumed. Because of a lack of data on either country's cattle sector, this same gain was assumed for that sector. The 30-percent gain projected for poultry was based on the assumption that productivity gains could be achieved more quickly in that sector.

Results of Trade Liberalization

The model results summarized in tables 8, 9, and 10 show the changes that can be expected to take place following reform in Yugoslavia and Poland. The changes simulated are:

- o All producer and consumer price wedges are removed and the price transmission elasticity is set to one. These changes allow full transmission of world price movements to the domestic economy.
- o Economywide reform takes place, which lowers per unit production costs and gives the impetus for significant productivity gains.

The major changes in agricultural production and trade that are projected are outlined below.

Poland

Substantial rise in pork exports. Because hog producers were taxed in 1986, trade liberalization results in a 26-percent rise in producer prices, while at the same time consumer demand is depressed by a 43-percent rise in consumer

Table 8--Changes in production, supply, and net trade resulting from trade liberalization

Commodity	Initial supply	Final supply	Percent change in supply	Initial demand	Final demand	Percent change in demand	Initial net trade	Final net trade	Percent change in net trade
	1,000 metric tons		Percent	1,000 metric tons		Percent	1,000 metric tons		Percent
Poland:									
Beef and veal	854	675	-20.9	807	929	15.1	47	-254	-640.0
Pork	1,749	2,414	38.0	1,688	1,496	-11.4	61	919	1,405.8
Lamb	30	40	32.3	30	30	0.0	0	10	n.a.
Poultry meat	325	346	6.4	312	329	5.5	13	17	28.0
Eggs	457	464	1.5	454	481	6.0	3	-17	-671.0
Milk	15,817	16,993	7.4	15,817	16,993	7.4	0	0	n.a.
Butter	289	364	25.9	328	329	0.3	-39	35	-188.9
Cheese	114	85	-25.7	118	118	0.0	-4	-33	734.4
Dairy powder	161	252	56.5	132	134	1.2	29	118	308.0
Wheat	7,502	7,877	5.0	9,802	10,435	6.5	-2,300	-2,558	11.2
Corn	113	114	0.6	349	396	13.4	-236	-282	19.6
Other coarse grains	17,421	20,448	17.4	17,894	19,934	11.4	-473	514	-208.7
Rice	1	1	5.9	91	91	0.0	-90	-90	-0.0
Soybeans	1	1	8.0	7	7	-0.0	-6	-6	-1.4
Soymeal	5	5	-0.1	1,035	1,118	8.0	-1,030	-1,113	8.1
Soyoil	1	1	-0.1	56	57	1.5	-55	-56	1.5
Other oilseeds	1,313	1,240	-5.6	842	841	-0.1	471	398	-15.4
Other meals	512	511	-0.1	844	912	8.1	-332	-401	20.6
Other oils	328	328	-0.1	396	378	-4.5	-68	-50	-26.0
Cotton	1	1	-0.0	142	142	0.0	-141	-141	0.0
Sugar	1,811	1,707	-5.8	1,669	1,760	5.4	142	-53	-137.3
Tobacco	113	113	-0.0	114	114	0.0	-1	-1	0.7
Yugoslavia:									
Beef and veal	317	384	21.3	317	314	-1.0	0	71	n.a.
Pork	795	965	21.4	814	899	10.5	-19	66	447
Lamb	62	77	23.4	58	58	0.0	4	19	363
Poultry meat	329	335	1.9	316	287	-9.1	13	48	269
Eggs	262	282	7.5	260	272	4.5	2	10	405
Milk	4,805	4,855	1.0	4,805	4,855	1.0	0	0	n.a.
Butter	9	10	8.7	10	10	0.0	-1	0	78
Cheese	45	47	3.8	50	50	0.0	-5	-3	34
Dairy powder	8	10	22.4	8	8	0.0	0	2	n.a.
Wheat	4,776	5,251	10.0	5,477	6,060	10.6	-701	-809	15
Corn	12,502	13,265	6.1	11,040	14,203	28.7	1,462	-938	164
Other coarse grains	1,043	1,286	23.3	1,080	1,078	-0.2	-37	208	662
Rice	29	29.5	1.7	49	64.3	31.2	-20	-35	74
Soybeans	225	184	-18.0	430	430	-0.0	-205	-245	20
Soymeal	320	320	-0.1	488	513	5.1	-168	-193	15
Soybean oil	69	69	-0.1	71	55	-23.0	-2	14	813
Other oilseeds	581	637	9.6	628	628	0.0	-47	8	117
Other oilmeals	222	222.6	0.3	242	266.2	10.0	-20	-44	118
Other oils	234	234.6	0.3	261	385.1	47.5	-27	-151	457
Cotton	0.4	0.4	0.0	114	114	0.0	-114	-114	0
Sugar	989	904.2	-8.6	934	1,055.2	13.0	55	-151	375
Tobacco	79	79	0.0	69	69	0.0	10	10	0

n.a. = Not available

Table 9--Changes in world trade, world prices, and domestic producer and consumer prices following trade liberalization

Commodity	Poland				Yugoslavia			
	World trade	World prices	Producer prices	Consumer prices	World trade	World prices	Producer prices	Consumer prices
	Percent							
Beef and veal	1.7	0.5	-40.3	-15.9	1.7	-0.2	-29.4	-9.4
Pork	35.8	-2.2	25.6	43.1	2.0	-0.2	-28.9	-20.6
Lamb	0.6	-0.4	42.2	-0.4	1.0	-0.5	-0.5	-0.3
Poultry meat	-0.0	-0.3	-37.8	1.1	1.0	-0.1	-45.1	-0.1
Eggs	3.1	0.0	-33.1	-25.2	0.8	-0.0	-28.7	-19.6
Milk	0.1	0.0	-34.9	-39.9	0.0	0.0	-43.3	-12.1
Butter	0.3	-1.4	-1.4	-1.1	-0.1	-0.0	-0.0	-0.0
Cheese	3.0	-0.3	-0.3	-0.2	-0.1	-0.0	-0.0	-0.0
Dairy powder	2.1	-3.8	-3.8	-3.1	0.0	-0.1	-0.1	-0.1
Wheat	0.4	-0.2	-56.3	2.2	0.0	0.3	-38.6	-25.0
Corn	0.4	-0.8	-40.9	-0.5	0.3	1.4	-30.7	-31.1
Other coarse grains	1.2	-1.1	-47.1	-0.8	0.3	-0.0	-3.0	7.3
Rice	-0.0	-0.1	-0.0	-0.0	0.2	0.1	0.0	-74.3
Soybeans	-0.0	-0.2	-0.2	-0.2	0.1	0.2	-48.4	0.2
Soymeal	0.2	-0.7	-0.7	-0.5	0.0	-0.1	0.0	0.1
Soyoil	-0.0	0.4	0.5	0.3	-0.0	0.3	0.2	0.2
Other oilseeds	-0.6	0.0	-34.1	0.0	-0.8	0.3	0.3	0.3
Other meals	0.3	-0.4	-0.4	-0.1	0.6	-0.6	-0.6	-0.2
Other oils	-0.1	-0.0	0.1	16.7	1.0	1.5	1.5	-72.6
Cotton	0.0	-0.0	-0.0	-0.0	0.0	0.1	0.1	0.0
Sugar	-0.2	0.8	-32.7	-23.1	0.4	1.0	-44.9	-55.7
Tobacco	0.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0

Table 10--Changes in producer and consumer surplus, government expenditures, and welfare following trade liberalization

Commodity	Poland				Yugoslavia			
	Producer surplus	Consumer surplus	Change in government expenditure	Change in welfare	Producer surplus	Consumer surplus	Change in government expenditure	Change in welfare
	Million U.S. dollars							
Beef and veal	-466	178	-455	141	-354	225	-279	149
Pork	1,562	-1,013	-316	648	-436	1,023	231	355
Lamb	54	0	37	14	13	0	0	13
Poultry meat	-119	-3	-202	59	-428	0	-584	157
Eggs	-216	187	-86	39	-178	225	0	48
Milk	-653	1,307	330	211	-989	443	-661	116
Butter	102	9	0	70	1	0	0	1
Cheese	-58	1	0	-35	2	0	0	2
Dairy powder	93	10	0	71	1	0	0	1
Wheat	-542	-20	-922	297	-514	677	-57	221
Corn	-9	0	-9	0	-760	1,154	-8	402
Other coarse grains	-837	17	-1,221	255	14	-13	-18	19
Rice	0	0	0	0	0	66	60	7
Soybeans	0	0	0	0	-81	0	-88	7
Soymeal	0	2	0	2	0	0	0	0
Soyoil	0	0	0	0	0	0	0	0
Other oilseeds	-188	0	-220	24	18	-1	0	17
Other meals	0	0	0	0	0	0	0	0
Other oils	0	-24	-25	0	2	512	438	75
Cotton	0	0	0	0	0	0	0	0
Sugar	-167	101	-73	7	-209	536	291	37
Tobacco	0	0	0	0	0	0	0	0
Total	-1,444	752	-3,162	1,803	-3,898	4,847	-675	1,627

prices. The resulting surplus is augmented further by the expected productivity increase. Thus, the model predicts substantial domestic pressures for increased pork exports.

Switch from exporter to importer of beef. The realignment of Polish beef prices leads to a fall in output and an increase in consumption. Polish cattle inventories and beef production are presently on the decline because of unfavorable price ratios. The model projects a continuation of that trend. On the consumer side, beef prices after liberalization are lower than pork prices, leading to a shift from pork to beef consumption.

Moderate increases in imports of wheat and corn. Consumer prices rise just 2 percent, while producer prices fall 56 percent. Because of the productivity shift, there is a net 5-percent increase in output, despite the substantial price drop. At the same time, there is a 6.5-percent increase in demand, mainly a result of increased feed use in the hog sector. The result is an 11-percent rise in imports.

Switch to net exporter of other coarse grains. Again, the negative effect of a 47-percent decline in rye and barley prices is offset by productivity increases, which lead to a net 17-percent rise in output. Increased feed needs generate an 11-percent increase in demand, but still leave an exportable surplus.

Increase in oilmeal imports. A 34-percent decline in the producer prices for rapeseed leads to a decline in domestic meal output. Changes in the consumer prices of oilseed meals are negligible, and the projected increases in the livestock sector generate an increased demand for both soybean and other meals. The result is an 8-percent increase in soymeal imports and a 20-percent rise in net imports of other meals.

Poland becomes a large net agricultural exporter. This status results mainly from the increase in pork exports, which more than compensates for the increases in grain and meal imports. This result seems entirely plausible, given recent trends in Poland's agricultural trade. According to data of the Food and Agriculture Organization, Poland is currently a net agricultural importer, but net imports have been declining steadily throughout the 1980's. Poland is already a net exporter of food and agricultural products, according to the SITC classification. The controversial aspect of these results, as modelled here, is the implication that Poland's comparative advantage in agriculture lies in pork production and that current policies stressing grain self-sufficiency may not in Poland's best interest.

Net gain in welfare. Poland realizes a significant net gain in welfare. Producers lose, consumers gain overall, but the largest source of the welfare increase is the decline in government expenditures.

Yugoslavia

Yugoslavia becomes a larger net exporter of all meats. Reform results in production gains of all meats except poultry, ranging from 21-23 percent. Demand is largely unchanged for beef, but rises 10 percent for pork. Demand for poultry declines 9 percent, despite virtually no change in poultry consumer prices. This is the result of the substitution of pork, the consumer price of which declines 21 percent. The result is an exportable surplus of 204,000 tons of poultry.

Substantial increase in net grain imports. Because of productivity gains, production of wheat and corn rises 10 and 6 percent, despite substantial decreases in the producer prices (25 and 31 percent). However, as a result of the decline in consumer prices and the increase in livestock production, demand rises substantially, leading to 1.5 million tons of net grain imports.

Increased imports of oilseeds and meals. Total imports of oilseeds and meals, expressed in soymeal equivalent, rise 16 percent. There is a decline in soybean production, partially offset by an increase in the production of other oilseeds (presumably sunflowerseed). Total demand rises by 4 percent.

Significant decline in net agricultural imports. With reform, Yugoslavia could become nearly self-sufficient in agricultural production, according to the model results. Net imports decline from $213 million to $36 million. However, Yugoslavia is also an exporter of fruits, vegetables, wine, and high-valued, processed products. Yugoslav economists expect these exports to increase in the coming decade. The model does not include these products. But, if these products were added in, Yugoslavia could turn out to be a net agricultural exporter following reform.

Net gain in welfare. Yugoslavia's overall welfare gain is in the same range as Poland's following liberalization. However, the sources of that gain are different. Because Yugoslavia's budget subsidies were much lower than Poland's, less of the welfare gain comes from a reduction in government expenditures. Most of Yugoslavia's welfare gain comes from the increase in consumer surplus. Yugoslavia's producers lose more than Poland's.

Evaluation of Results; Directions for Further Research

The model results predict some dramatic changes in the structure of agricultural production and trade in both Poland and Yugoslavia. For example, they suggest that Poland's role as a net agricultural exporter will be entirely driven by the pork sector, that it will remain a net importer of most other products. Yugoslavia, on the other hand, currently a sizable exporter of corn and a very small importer of wheat, is projected to become a large importer of both grains. These are rather strong statements and are heavily dependent on the assumptions used in the model. There are four basic assumptions that could be called into question; these are discussed below.

Productivity Increases

It is obviously far from certain that Yugoslav and Polish farmers will realize the productivity gains assumed in the model. One could object to this analysis on the ground that trade liberalization without simultaneous productivity gains would yield quite different results. In the case of Poland, initial model runs with no assumptions of productivity gains also showed that country becoming a net agricultural exporter. Pork exports were smaller under that scenario, but still significantly larger than at present. The main difference in the results without productivity gains was that they showed Poland more than doubling its grain imports.

Assumptions of productivity gains have more of an effect on the outcome of trade liberalization in Yugoslavia. Initial model results showed that without productivity gains, that country would become a larger net agricultural

importer. Total grain imports would reach 2.6 million tons, and Yugoslavia would become a net importer of all meats.

Calculation of the Price Wedge

For all the commodities, the largest component of the PSE and CSE calculations was the gap between the trade price (or reference price) and the domestic producer or consumer price. As a result, the choice of reference price is crucial. This choice was a particularly thorny problem for the livestock sector. Trade prices for fresh pork, for example, can range between $1,000 and $2,000 a ton, depending on the quality. As a result, the PSE calculated for Polish pork can switch from positive to negative with the use of a different reference price. A positive producer price wedge for pork in the case of Poland, instead of the negative one used here, would clearly alter the model results.

To test the model's sensitivity to the choice of reference price, the author calculated a new price wedge for Polish pork using a reference price close to $1,000/ton and ran the model again using the resulting positive price wedge. Under the same assumptions of productivity increases, the results still showed an increase in pork exports. However, net exports came to 183,000 tons instead of 913,000. The outcome for net beef trade is also very sensitive to changes in the price wedge. With a higher reference price for beef, the results show Poland becoming an exporter of beef instead of an importer.

The Exchange Rate

One could well question the use of the official exchange rate for the PSE and CSE calculations, especially in the case of Poland. It is well-known that before the 1990 reform program, the black market exchange rate in Poland was five times (or more) the official rate, a clear indication that the zloty was grossly overvalued. The black market rate cannot be assumed to be the "real rate" because it results from an artificially constrained supply. This is an important caveat in that what are generally positive PSE's in this work could become negative with the use of a realistic exchange rate. This was not considered such a serious problem for Yugoslavia.

In the case of Poland, an attempt was made to test the sensitivity of the results to the exchange rate. The model was rerun after recalculating the PSE's and CSE's using a doubled exchange rate. As might be expected, the new PSE's showed producers to be heavily taxed, and consumer subsidies became very large indeed. It turned out that, while the new exchange rate altered the magnitude of the net trade changes, the directions of change were largely the same as in the first run. The model results, based on these exchange rate-adjusted price wedges and without productivity gains, show pork exports of about 1 million tons, beef imports of about 300,000 tons, and, once again, grain imports doubling.

The Use of Annual Averages in Periods of Rapid Inflation

Both Yugoslavia and Poland experienced hyperinflation in 1989, and Yugoslavia had been experiencing accelerating inflation since the early 1980's. In 1986 Yugoslavia's inflation was 88 percent, while Poland's was 18 percent. The producer and trade prices, as well as the exchange rates used in these calculations, were all annual averages. As a result, PSE and CSE calculations could be sensitive to the exact timing of harvests, imports, and exports.

This was a real problem for Yugoslavia in 1989, when inflation came close to 2,000 percent. On more than one occasion, grain traders would sign a contract for a certain volume of corn imports because the trade price at that moment was lower than the domestic. However, by the time the corn arrived, the dinar had been devalued to the point where the imported corn was more expensive than the domestic. No attempt was made in this report to address this question. Since inflation was much lower in both countries in 1986, the assumption was that timing was not such a serious problem in that year.

On a final note, because of the relatively large share of agriculture in the GDP of Poland and Yugoslavia, it is likely that there would be a significant income effect from the production gains realized following reform. In a general equilibrium model, the change in income would feed back into the demand equations, possibly counteracting the negative effect of the rise in consumer prices. A recent study by Wanio, Sullivan, and Krisoff endogenizes the income variable in SWOPSIM for the developing economies.[9] Future work will experiment with that approach in the case of Poland and Yugoslavia.

Conclusions

The model results are sufficiently sensitive to changes in the underlying assumptions that the reader should be skeptical of the absolute magnitude of the changes listed in tables 6 and 7. Nevertheless, the directions of change indicated by the model results have more credibility. It seems clear from this analysis that, assuming it sticks to its present path toward a market economy, Poland has strong potential to become a significant exporter of livestock products (mainly pork) once the short-term disruptions in the economy are worked out. At the same time, it could become a somewhat larger importer of grains and oilseed products.

Yugoslavia's potential to become a net agricultural exporter is not so clear from the results. According the model results, Yugoslavia will remain a net importer, and if the projected productivity gains do not materialize, Yugoslavia could become a larger net importer than it is now. Yugoslav economists expect that Yugoslavia will become a net exporter. However, they agree with the model results in that they believe Yugoslavia should not be exporting grain. Rather, it should be using its corn to produce higher valued goods for export, such as meat products. Yugoslavia's best export prospects lie in products which were not included in the model: fruits, vegetables, wine, and organically grown produce.

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[9]Barry Krissof, John Sullivan, and John Wainio, "Developing Countries in an Open Economy: The Case of Agriculture," presented at the World Bank/OECD Conference, Paris, Oct. 1989.

Appendix: Measurement of Support to Agricultural Producers

The monetary effect of the procurement and border intervention policies were measured together through the calculation of the gap between domestic producer prices and the border price. This method was based on the assumption that with a free market and open borders producer prices and border prices would differ only by the costs of transferring the goods from the farm to the wholesaler (transport, storage, and normal markups paid to middlemen). Any difference beyond those costs can be attributed to government intervention.

The value of other subsides, principally input subsidies, was calculated from budget data published by the government statistical offices. This procedure is rife with problems in that budgetary data were rarely complete, in most cases were reported only on an aggregate level, and were not broken out by commodity. Therefore, a large number of assumptions had to be made in estimating these subsidies. Investment subsidies, while sizable in some cases, were not estimated at all, due to a lack of data.

Price Gap Calculations

Both the Yugoslav and Polish yearbooks provide data on the average procurement prices paid by socialized organizations and the free-market prices. Average producer prices were calculated as a weighted average of the state and free-market prices. For this purpose, all output procured by state agencies was valued at the average state procurement price, while all unprocured production was valued at the free-market price (where available). The assumption behind this procedure was that the free-market price was the opportunity cost of onfarm consumption.

For the most part, the border price, also referred to as the reference price, was the implicit price calculated from value and volume trade data reported by the Food and Agriculture Organization of the United Nations, converted to the local currency according to the official exchange rate. In cases where a country reported both imports and exports of a given commodity, the import price was used if the country was a net importer, and vice versa. In cases where the country was only a very small trader of a commodity, the trade price of a neighboring country was used. For example, the Hungarian border price was used for Polish poultry.

The effects of procurement policies and border intervention components of the PSE's were measured by calculating the gap between the trade price and the free-market price and multiplying that by total volume of production. This value could be either positive (subsidy) or negative (tax). It happens that, for both Yugoslavia and Poland, these values were almost entirely positive.

Use of Budgetary Data on Input Subsidies

The Polish yearbook provided total expenditures from the budget for agricultural subsidies for fertilizer, plant protection agents (PPA's), seed, fuel, and feed. The first four were assumed to apply to crops and were allocated according to area planted. The method of allocation was admittedly crude; it would have been better to allocate subsidies for fertilizers and PPA's according to application rates and seed subsidies according to seeding rates. To date, though, the necessary data are not available. Feed subsidies were attributed to livestock production and were allocated among beef, pork,

and poultry (lamb and mutton production is largely unsubsidized), according to value of production.

The Yugoslavs do not publish such budget data. The only source of input data available to date is figures on fertilizer subsidies supplied by the Agricultural Counsellor in Belgrade. These are reported as a percentage of the price in effect at a given date, usually December of the previous year. This information was used to calculate the subsidies paid per ton of nutrient weight (separately for nitrogen, phosphorous, and potassium), which were then multiplied by total fertilizer consumption. This total was allocated among crops according to area planted. This whole procedure was carried out separately for private and socialized production, since fertilizer application rates are vastly different between the two sectors. Similar data on other subsidies were more elusive in that many of them are paid by the republic governments and vary widely from one republic to another.

Measurement of Consumer Food Subsidies

In all cases, the CSE's represent the gap between domestic and trade prices. The trade prices used were the same as those used in calculating the PSE's. However, before the consumer prices could be compared with the trade prices, the consumer prices had to be adjusted to represent the price of the respective good at the same stage of the production process as the trade price. The price charged at the retail level includes a marketing margin to cover processing, transport, and other marketing costs. It was thus necessary to estimate this margin and subtract it from the retail price in order to calculate the consumer price gap.

In the case of Poland, budget subsidy data were used to estimate the consumer price minus the marketing margin. The Polish yearbook reports aggregate subsidies paid for grain products, meat, dairy products, sugar, fish, and edible oils. Per unit subsidies, calculated on the basis of these numbers, were subtracted from the state producer price to estimate the consumer price. This price was applied to all procured production. The difference between total consumption and the volume of procurement was valued at the free-market price, if available; otherwise at the state procurement price. A weighted average of these prices was computed and that average consumer price was compared with the trade price.

Yugoslavia publishes extensive retail price data, but only limited data on wholesale prices. It does not publish budget subsidy data. Where both retail and wholesale prices were published, there was generally about a 12-percent difference between the two. Wholesale prices were thus estimated by subtracting a 12-percent margin from the retail price. For the meats, an additional margin of 10-12 percent was subtracted from the wholesale price to account for marketing costs.[10] For wheat, the wholesale price for flour (given in the Yugoslav statistics) was converted to wheat equivalent by dividing by a factor of 0.73. Average consumer prices were then calculated as for Poland and compared with the border prices.

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[10]Based on information provided to the author by Dusan Radmanovic of the Institute for Agricultural Economics in Belgrade, Yugoslavia.

Appendix table 1--Preliminary estimates of Polish PSE's

Attribute	Unit	1983	1984	1985	1986	1987
Wheat:						
Production	1,000 tons	5,165	6,010	6,461	7,502	7,942
State price	zl./ton	20,430	22,380	24,750	27,690	32,749
Free-market price	zl./ton	27,210	28,240	30,320	34,630	37,440
Average price	zl./ton	25,237	26,472	28,411	32,311	35,856
Total value to producers	mil. zl.	130,349	159,098	183,566	242,396	284,772
Trade price	zl./ton	11,145	14,962	18,516	16,499	23,039
Policy transfers to producers--						
Effect of border measures	mil. zl.	72,785	69,177	63,934	118,620	101,799
Input subsidies	mil. zl.	2,659	4,342	8,342	15,340	21,473
Investment, credit subsidies and other services	mil. zl.	n.a.	n.a.	20,217	25,288	31,912
Total PSE	mil. zl.	75,444	73,518	92,493	159,248	155,184
PSE per unit value	percent	58	46	50	66	54
PSE per unit production	zl./kg.	15	12	11	17	15
Corn:						
Production	1,000 tons	64	57	69	168	146
State price	zl./ton	17,000	17,000	27,000	31,000	n.a.
Total value to producers	mil. zl.	1,088	969	1,863	5,208	n.a.
Trade price	zl./ton	12,389	17,313	21,461	21,829	34,772
Policy transfers to producers--						
Effect of border measures	mil. zl.	295	(18)	382	1,541	n.a.
Input subsidies		26	38	53	130	245
Total PSE	mil. zl.	321	20	435	1,671	n.a.
PSE per unit value	percent	30	2	24	33	n.a.
PSE per unit production	zl./kg.	5	0	6	10	n.a.
Barley:						
Production	1,000 tons	3,262	3,555	4,086	4,412	4,335
State price	zl./ton	20,938	21,983	24,247	26,979	30,922
Free-market price	zl./ton	24,210	24,490	26,690	30,980	33,740
Average price	zl./ton	23,444	23,916	25,990	29,901	32,985
Total value	mil. zl.	76,474	85,021	106,197	131,923	142,991
Trade price	zl./ton	9,894	14,044	14,759	11,015	16,038
Policy transfers to producers--						
Effect of border measures	mil. zl.	44,199	35,095	45,892	83,324	73,466
Input subsidies	mil. zl.	1,901	2,685	5,432	9,913	12,747
Investment, credit subsidies and other services	mil. zl.	n.a.	n.a.	13,591	13,569	16,089
Total PSE	mil. zl.	46,100	37,780	64,915	106,806	102,302
PSE per unit value	percent	60	44	61	81	72
PSE per unit production	zl./kg.	14	11	16	24	24
Rye:						
Production	1,000 tons	8,780	9,540	7,600	7,074	6,816
State price	zl./ton	17,854	17,695	18,718	20,614	24,198
Free-market price	zl./ton	21,550	20,680	22,700	26,780	29,250
Average price	zl./ton	20,299	19,661	21,524	25,289	28,141
Total value	mil. zl.	178,223	187,563	163,580	178,898	191,810
Trade price	zl./ton	12,765	14,789	15,327	16,187	20,694
Policy transfers to producers--						
Effect of border measures	mil. zl.	66,151	46,480	47,096	64,390	50,762
Input subsidies	mil. zl.	5,964	9,022	12,090	18,972	23,989
Investment, credit subsidies and other services	mil. zl.	n.a.	n.a.	17,493	17,840	21,312
Total PSE	mil. zl.	72,115	55,502	76,679	101,202	96,063
PSE per unit value	percent	40	30	47	57	50
PSE per unit production	zl./kg.	8	6	10	14	14

See notes at end of table

Continued--

Appendix table 1--Preliminary estimates of Polish PSE's--Continued

Attribute	Unit	1983	1984	1985	1986	1987
Beef:						
Production, carcass	1,000 tons	772	725	753	900	897
State price	zl./ton	172,839	194,442	223,918	253,069	293,512
Average export price	zl./ton	155,385	159,903	195,228	190,215	374,580
Value to producers	mil. zl.	122,197	149,526	184,061	215,797	250,953
Policy transfers to producers--						
Effect of border measures	mil. zl.	13,474	25,041	21,604	56,569	(72,718)
Feed subsidies	mil. zl.	1,635	5,840	11,144	14,939	20,441
Coal subsidies	mil. zl.	n.a.	n.a.	2,760	4,288	5,928
Investment, credit subsidies and other services	mil. zl.	n.a.	n.a.	21,325	24,214	29,294
Total PSE	mil. zl.	15,109	30,880	56,833	100,010	(17,055)
PSE per unit value	percent	12	21	31	46	(7)
PSE per unit volume	zl./kg.	20	43	75	111	(19)
Pork:						
Production, carcass	1,000 tons	1,444	1,228	1,463	1,788	1,757
State price	zl./ton	176,708	212,132	226,099	231,361	256,779
Free-market price	zl./ton	222,632	252,872	259,528	271,300	298,279
Average price	zl./ton	189,461	223,898	235,089	240,845	267,041
Value to producers	mil. zl.	273,582	274,946	343,935	430,632	469,191
Import price	zl./ton	158,609	113,812	208,304	381,708	562,437
Policy transfers to producers--						
Effect of border measures	mil. zl.	44,551	135,185	39,186	(251,862)	(519,011)
Feed subsidies	mil. zl.	3,058	9,891	18,353	26,700	35,604
Coal subsidies	mil. zl.	n.a.	n.a.	4,546	7,663	10,325
Investment, credit subsidies and other services	mil. zl.	n.a.	n.a.	35,123	43,277	51,023
Total PSE	mil. zl.	47,609	145,076	97,208	(174,222)	(422,059)
PSE per unit value	percent	17	53	28	(40)	(90)
PSE per unit volume	zl./kg.	33	118	66	(97)	(240)
Sheep:						
Production, lvwt.	1,000 tons	27	28	39	44	48
State price	zl./ton lvwt.	195,454	218,401	248,111	254,276	272,494
Value of production	mil. zl.	10,359	13,322	18,608	22,376	13,080
Export price	zl./ton lvwt.	196,905	223,868	268,951	372,813	667,394
Policy transfers to producers--						
Effect of border measures	mil. zl.	(39)	(153)	(813)	(5,216)	(18,955)
Feed subsidies	mil. zl.	57	226	981	1,364	1,840
Coal subsidies	mil. zl.	n.a.	n.a.	243	391	2,374
Investment, credit subsidies and other services	mil. zl.	n.a.	n.a.	1,879	2,212	2,637
Total PSE	mil. zl.	(20)	(108)	2,290	(1,249)	(12,104)
PSE per unit value	percent	(0)	(1)	12	(6)	(93)
PSE per unit volume	zl./kg.	(1)	(4)	59	(28)	(252)
Poultry meat:						
Production, carcass	1,000 tons	199	255	290	332	343
State price	zl./ton	182,416	196,005	203,835	235,987	276,308
Total value to producers	mil. zl.	36,301	49,981	59,112	78,348	94,774
Hungarian export price	zl./ton	88,969	103,918	143,740	178,867	266,312
Policy transfers to producers--						
Effect of border measures	mil. zl.	18,596	23,482	17,428	18,964	3,429
Feed subsidies	mil. zl.	421	2,054	3,682	5,531	7,960
Coal subsidies	mil. zl.	n.a.	n.a.	912	1,588	2,309
Investment, credit subsidies and other services	mil. zl.	n.a.	n.a.	7,046	8,965	11,407
Total PSE	mil. zl.	19,017	25,536	29,068	35,048	25,105
PSE per unit value	percent	52	51	49	45	26
PSE per unit volume	zl./kg.	96	100	100	106	73

See notes at end of table

Continued--

Appendix table 1--Priliminary estimates of Polish PSE's--Continued

Attribute	Unit	1983	1984	1985	1986	1987
Sugar:						
Raw sugar production	1,000 tons	1,931	1,894	1,730	1,676	1,651
State price	zl./ton	28,816	31,341	34,537	42,511	57,612
Value to producers	mil. zl.	55,643	59,349	59,762	71,316	95,117
Export price	zl./ton	20,755	18,966	21,288	31,867	53,487
Policy transfers to producers--						
Effect of border measures	mil. zl.	15,565	23,433	22,927	18,449	6,810
Input subsidies	mil. zl.	841	1,204	2,323	3,908	5,476
Investment, credit subsidies and other services		n.a.	n.a.	7,309	9,040	13,187
Total PSE	mil. zl.	16,406	24,637	32,559	31,397	25,473
PSE per unit value	percent	29	42	54	44	27
PSE per unit volume	zl./kg.	8	13	19	19	15
Milk:						
Production	1,000 liters	15,613	16,243	15,955	15,318	15,079
State price	zl./ton	18,425	20,119	22,370	26,242	31,747
Free-market price	zl./ton	21,339	22,308	26,188	30,068	N.A.
Average price	zl./ton	19,338	20,757	23,524	27,415	32,731
Value to producers	mil. zl.	311,290	347,615	386,956	432,958	493,551
Hungarian export price	zl./ton	23,679	22,866	26,041	34,333	49,496
Policy transfers to producers--						
Effect of border measures	mil. zl.	(69,871)	(35,311)	(41,408)	(109,258)	(252,799)
Feed subsidies	mil. zl.	n.a.	n.a.	15,457	20,904	29,449
Coal subsidies	mil. zl.	n.a.	n.a.	5,415	8,209	11,826
Investment, credit subsidies and other services	mil. zl.	n.a.	n.a.	34,433	39,658	50,160
Total PSE	mil. zl.	(69,871)	(35,311)	13,897	(40,487)	(161,364)
PSE per unit value	percent	(22)	(10)	4	(9)	(33)
PSE per unit volume	zl./kg.	(4)	(2)	1	(3)	(11)
Eggs:						
Production	1000 tons	420	451	475	457	438
State price	zl./ton	175,248	169,011	188,103	212,336	267,061
Free-market price	zl./ton	243,139	231,976	247,732	289,328	363,898
Average price	zl./ton	216,558	209,452	225,837	263,633	334,508
Total value to producers	mil. zl.	90,991	94,454	107,232	120,351	146,515
Trade price	zl./ton	81,168	102,797	176,827	201,350	255,936
Policy transfers to producers--						
Effect of border measures	mil. zl.	56,886	48,097	23,271	28,433	34,415
Feed subsidies	mil. zl.	n.a.	n.a.	4,339	6,150	9,046
Coal subsidies	mil. zl.	n.a.	n.a.	1,461	2,083	3,061
Investment, credit subsidies and other services	mil. zl.	n.a.	n.a.	9,485	10,800	14,023
Total PSE	mil. zl.	56,886	48,097	38,556	47,466	60,545
PSE per unit value	percent	63	51	36	39	41
PSE per unit volume	zl./kg.	135	107	81	104	138
Rapeseed:						
Production	1000 tons	554	911	1,073	1,298	1,186
State price	zl./ton	44,621	43,149	46,040	48,510	51,874
Total value to producers	mil. zl.	24,720	39,309	49,401	62,966	61,523
Trade price	zl./ton	27,340	38,905	36,679	30,424	41,775
Policy transfers to producers--						
Effect of border measures	mil. zl.	9,574	3,866	10,045	23,476	11,977
Input subsidies	mil. zl.	427	1,008	2,498	3,988	4,893
Investment, credit subsidies and other services	mil. zl.			16,977	11,926	11,717
Total PSE	mil. zl.	10,001	4,874	29,520	39,390	28,587
PSE per unit value	percent	40	12	60	63	46
PSE per unit volume	zl./kg.	18	5	28	30	24

n.a. = Not available.
Entries in parentheses indicate negative numbers.

Appendix table 2--Preliminary estimates of Yugoslav PSE's

Attribute	Unit	1983	1984	1985	1986	1987
Wheat:						
Production	1,000 tons	5,525	5,595	4,839	4,776	5,272
State price	din./ton	15,240	22,630	37,120	70,090	150,266
Free-market price	din./ton	20,357	32,923	47,917	78,049	187,736
Average price	din./ton	17,575	27,698	42,459	73,909	166,762
Value to producers	mil. din.	97,101	154,972	205,460	352,991	879,169
Trade price	din./ton	10,828	17,891	26,687	33,540	76,217
Policy transfers to producers--						
Effect of border measures	mil. din.	37,277	54,872	76,322	192,806	477,353
Fertilizer subsidy	mil. din.	0	311	4,111	8,518	10,135
Fertilizer price gap	mil. din.	(1,294)	(4,401)	(11,178)	(18,353)	(12,016)
Total PSE		35,983	50,782	69,255	182,971	475,472
PSE per unit value	percent	37	33	34	52	54
PSE per unit quantity	din./kg.	7	9	14	38	90
Corn:						
Production	1,000 tons	10,719	11,293	9,896	12,526	8,863
State price	din./ton	13,680	25,760	36,050	45,760	134,839
Free-market price	din./ton	17,357	31,821	42,827	59,073	149,935
Average price	din./ton	16,303	30,292	40,580	55,432	145,779
Value to producers	mil. din.	174,748	342,084	401,575	694,341	1,292,039
Trade price	din./ton	9,960	24,813	30,162	33,087	66,948
Policy transfers to producers--						
Effect of border measures	mil. din.	67,987	61,871	103,092	279,890	698,679
Fertilizer subsidy	mil. din.	0	525	6,042	12,395	12,646
Fertilizer price gap	mil. din.	(1,538)	(6,034)	(16,428)	(26,707)	(17,485)
Total PSE	mil. din.	66,449	56,362	92,706	265,578	693,840
PSE per unit value	percent	38	16	23	38	54
PSE per unit quantity	din./kg.	6	5	10	22	78
Soybeans:						
Production	1,000 tons	210	228	174	225	237
State price	din./ton	29,860	60,360	102,320	175,690	309,005
Value to producers	mil. din.	6,271	13,762	17,804	39,530	73,234
Trade price	din./ton	17,677	42,094	48,222	63,000	176,000
Policy transfers to producers--						
Effect of border measures	mil. din.	2,558	4,165	9,413	25,355	31,522
Fertilizer subsidy	mil. din.	0	77	680	756	907
Fertilizer price gap	mil. din.	(218)	(889)	(1,256)	(2,716)	(2,490)
Total PSE	mil. din.	2,340	3,353	8,837	23,395	29,939
PSE per unit value	percent	37	24	50	59	41
PSE per unit quantity	din./kg.	11	15	47	104	126
Barley:						
Production	1,000 tons	661	748	704	703	504
State price	din./ton	19,797	29,592	41,347	56,392	140,450
Free-market price	din./ton	22,186	35,972	51,951	75,816	179,104
Average price	din./ton	21,312	33,251	46,920	69,307	169,050
Value to producers	mil. din.	14,087	24,872	33,032	48,723	85,201
Trade price	din./ton	14,288	30,209	37,931	61,735	119,749
Policy transfers to producers--						
Effect of border measures	mil. din.	4,643	2,276	6,328	5,323	24,848
Fertilizer subsidy	mil. din.	0	69	833	1,594	1,311
Fertilizer price gap	mil. din.	(442)	(1,836)	(3,151)	(5,407)	(4,957)
Total PSE	mil. din.	4,201	509	4,010	1,510	21,202
PSE per unit value	percent	30	2	10	3	25
PSE per unit quantity	din./kg.	6	1	5	2	42

See note at end of table.

Continued--

Appendix table 2--Preliminary estimates of Yugoslav PSE's--Continued

Attribute	Unit	1983	1984	1985	1986	1987
Beef:						
Production, carcass	1,000 tons	345	350	333	317	317
State price	din./ton	290,263	350,778	546,271	1,032,119	2,036,415
Value to producers	mil. din.	100,141	122,772	181,908	327,182	645,544
Average export price	din./ton carcass	123,553	190,139	245,580	327,882	958,186
Policy transfers to producers--						
Effect of border measures	mil. din.	57,515	56,224	100,130	223,243	341,799
PSE per unit value	percent	57	46	55	68	53
PSE per unit quantity	din./kg.	167	161	301	704	1,078
Pork:						
Production, carcass	1,000 tons	488	569	525	511	557
State price	din./ton	273,559	346,612	496,636	957,657	1,701,213
Value to producers	mil. din.	133,497	197,222	260,734	489,363	947,576
Trade price	din./ton carcass	109,748	160,559	260,719	576,333	1,610,138
Policy transfers to producers--						
Effect of border measures	mil. din.	79,940	105,864	123,857	194,856	50,729
PSE per unit value	percent	60	54	48	40	5
PSE per unit quantity	din./kg.	164	186	236	381	91
Poultry:						
Production, carcass	1,000 tons	287	311	297	328	323
State price	din./ton	150,900	231,776	362,682	577,972	1,144,694
Free-market price	din./ton	246,677	323,820	476,002	868,863	1,737,022
Average price	din./ton	213,608	289,466	435,550	767,211	1,512,019
Value to producers	mil. din.	61,306	90,024	129,358	251,645	488,382
Export price of poultry	din./ton	69,641	121,414	170,818	296,135	983,591
Policy transfers to producers--						
Effect of border measures	mil. din.	41,319	52,264	78,625	154,513	170,682
PSE per unit value	percent	67	58	61	61	35
PSE per unit quantity	din./kg.	144	168	265	471	528
Sugarbeets:						
Raw sugar production	1,000 tons	737	883	815	728	811
State price	din./ton	22,976	41,436	64,859	130,376	255,519
Value to producers	mil. din.	16,923	36,586	52,850	94,897	207,226
Trade price	din./ton	17,871	24,111	28,403	48,545	186,646
Policy transfers to producers--						
Effect of border measures	mil. din.	3,760	15,297	29,706	59,562	55,856
Fertilizer subsidies	mil. din.	0	58	674	1,171	1,492
Fertilizer price gap	mil. din.	(173)	(669)	(1,244)	(1,801)	(1,651)
Total PSE	mil. din.	3,587	14,686	29,136	58,932	55,697
PSE per unit value	percent	21	40	54	62	27
PSE per unit quantity	din./kg.	5	17	35	81	69

See note at end of table.

Continued--

Appendix table 2--Preliminary estimates of Yugoslav PSE's--Continued

Attribute	Unit	1983	1984	1985	1986	1987
Milk:						
Production	1,000 tons	4,747	4,718	4,827	4,810	4,895
State price	din./ton	19,960	28,689	42,697	81,240	144,386
Free-market price	din./ton	28,857	44,176	73,772	149,008	267,822
Average price	din./ton	26,161	39,411	64,148	128,336	231,374
Value to producers	mil. din.	124,180	185,935	309,651	617,248	1,132,576
Import price	din./ton	16,320	26,230	37,362	53,135	155,439
Policy transfers to producers--						
Effect of border measures	mil. din.	46,714	62,185	129,301	361,690	371,702
Total PSE	mil. din.	46,714	62,185	129,301	361,690	371,702
PSE per unit value	percent	38	33	42	59	33
PSE per unit quantity	din./kg.	10	13	27	75	76
Eggs:						
Production	1,000 tons	251	255	258	262	271
State price	din./ton	129,296	200,261	293,444	526,033	1,038,334
Free-market price	din./ton	164,636	250,649	368,142	660,885	1,345,630
Average price	din./ton	155,752	236,315	347,462	624,642	1,261,407
Value to producers	mil. din.	39,109	60,287	89,635	163,819	341,841
Export price	din./ton	72,742	137,611	221,446	401,624	961,836
Policy transfers to producers--						
Effect of border measures	mil. din.	20,844	25,181	32,509	58,489	81,184
Total PSE	mil. din.	20,844	25,181	32,509	58,489	81,184
PSE per unit value	percent	53	42	36	36	24
PSE per unit quantity	din./kg.	83	99	126	223	300
Sunflowerseed:						
Production	1,000 tons	202	139	154	233	486
State price	din./ton	33,983	60,684	99,908	173,208	300,599
Value to producers	mil. din.	6,865	8,435	15,386	40,357	146,091
Trade price	din./ton	21,219	48,465	79,652	134,198	272,714
Policy transfers to producers--						
Effect of border measures	mil. din.	2,578	1,699	3,119	9,089	13,552
Fertilizer subsidies	mil. din.	0	31	475	1,533	2,145
Fertilizer price gap	mil. din.	(125)	(508)	(1,343)	(4,125)	(3,781)
Total PSE	mil. din.	2,453	1,222	2,251	6,497	11,916
PSE per unit value	percent	36	14	15	16	8
PSE per unit quantity	din./kg.	12	9	15	28	25

Entries in parentheses indicate negative numbers.

Appendix table 3--Preliminary estimates of Polish CSE's

	Unit	1983	1984	1985	1986	1987
Wheat:						
Human consumption	1,000 tons	4,065	3,628	4,136	4,369	5,215
Estimated wholesale price	zl./ton	8,953	11,693	13,742	13,495	11,822
Free-market price	zl./ton	27,210	28,240	30,320	34,630	37,440
Average consumer price	zl./ton	12,148	13,925	16,524	15,605	17,825
Cost to consumers	mil. zl.	49,382	50,520	68,336	68,178	92,957
Trade price	zl./ton	11,145	14,962	18,516	16,499	23,039
Policy transfers to consumers--						
Border measures	mil. zl.	(4,077)	3,762	8,238	3,906	27,191
CSE per unit value	percent	(8)	7	12	6	29
CSE per unit quantity	zl./kg.	(1)	1	2	1	5
Beef:						
Total consumption	1,000 tons	578	591	603	637	629
Estimated wholesale price	zl./ton	144,686	192,864	224,013	213,885	260,000
Cost to consumers	mil. zl.	83,603	113,910	135,010	136,272	163,540
Trade price	zl./ton	155,385	159,903	175,023	168,290	n.a.
Policy transfers to consumers--						
Border measures	mil. zl.	6,182	(19,468)	(29,526)	(29,050)	n.a.
CSE per unit value	percent	7	(17)	(22)	(21)	n.a.
CSE per unit quantity	zl./kg.	11	(33)	(49)	(46)	n.a.
Pork:						
Total consumption	1,000 tons	1,123	1,034	1,116	1,281	1,326
Estimated wholesale price	zl./ton	158,196	194,575	200,501	200,140	203,051
Free-market price	zl./ton	222,635	252,872	259,528	271,300	300,000
Average consumer price	zl./ton	181,212	214,557	221,309	223,726	234,792
Cost to consumers	mil. zl.	203,452	221,764	247,000	286,593	311,334
Trade price	zl/ton	158,609	196,632	208,304	381,708	562,437
Policy transfers to consumers--						
Border measures	mil. zl.	(25,377)	(18,527)	(14,514)	202,375	434,457
CSE per unit value	percent	(12)	(8)	(6)	71	140
CSE per unit quantity	zl./kg.	(23)	(18)	(13)	158	328
Milk:						
Total consumption	1,000 tons	15,605	15,488	15,881	15,817	16,451
Estimated wholesale price	zl./ton	9,588	11,231	10,800	9,131	10,467
Free-market price		21,339	22,308	26,188	30,068	34,000
Average consumer price	zl./ton	13,387	14,723	15,618	15,539	16,868
Cost to consumers	mil. zl.	208,891	228,036	248,018	245,780	277,495
Trade price	zl./ton	23,679	22,866	26,041	34,333	59,884
Policy transfers to consumers--						
Border measures	mil. zl.	160,612	126,117	165,538	319,321	707,656
CSE per unit value	percent	77	55	67	126	255
CSE per unit value	zl./kg.	10	8	10	19	43
Sugar:						
Consumption, raw value	1,000 tons	1,789	1,806	1,670	1,678	1,887
Estimated wholesale price	zl./ton	24,611	27,885	30,094	42,241	57,612
Cost to consumers	mil. zl.	44,027	50,351	50,262	71,145	108,714
Export price	zl./ton	20,755	18,966	21,288	31,551	53,487
Policy transfers to consumers--						
Border measures	mil. zl.	(7,447)	(16,893)	(15,235)	(17,937)	(7,784)
CSE per unit value	percent	(17)	(34)	(30)	(25)	(7)
CSE per unit volume	zl./kg.	(4)	(9)	(9)	(11)	(4)

See notes at end of table.

Continued--

Appendix table 3--Preliminary estimates of Polish CSE's--Continued

	Unit	1983	1984	1985	1986	1987
Eggs:						
Consumption	1,000 tons	402	426	450	433	412
Estimated wholesale	zl./ton	171,210	187,943	171,210	242,992	283,248
Free-market price	zl./ton	243,139	231,976	247,732	289,328	363,898
Average price	zl./ton	216,820	217,904	222,394	275,614	342,939
Cost to consumers	mil. zl.	87,193	92,873	100,078	119,400	141,291
Trade price	zl./ton	81,168	102,797	126,827	201,350	255,936
Policy transfers to consumers--						
Border measures	mil. zl.	(54,552)	(49,060)	(43,006)	(32,172)	(35,845)
CSE per unit value	percent	(63)	(53)	(43)	(27)	(25)
CSE per unit volume	zl./kg.	(136)	(115)	(96)	(74)	(87)
Poultry:						
Consumption	1,000 tons	194	251	264	287	305
Estimated wholesale price	zl./ton	86,667	120,000	137,333	148,000	162,667
Producer price	zl./ton	182,416	196,005	203,835	235,987	276,308
Average price	zl./ton	129,058	145,524	159,125	176,156	198,112
Total cost to consumers	mil. zl.	25,015	36,529	42,032	50,472	60,424
Trade price	zl./ton	88,969	103,918	143,740	178,867	266,312
Policy transfers to consumers--						
Border measures	mil. zl.	(7,770)	(10,444)	(4,064)	777	20,801
CSE per unit value	percent	(31)	(29)	(10)	2	34
CSE per unit quantity	zl./kg.	(40)	(42)	(15)	3	68
Vegetable oil:						
Consumption	1,000 tons	241	281	294	290	316
Estimated wholesale price	zl./ton	93,333	106,667	120,000	128,000	146,667
Cost to consumers	mil. zl.	22,528	29,925	35,268	37,157	46,347
Average trade price	zl./ton	41,431	80,222	88,588	63,221	88,081
Policy transfers to consumers--						
Border measures	mil. zl.	(12,528)	(7,419)	(9,232)	(18,805)	(18,513)
CSE per unit value	percent	(56)	(25)	(26)	(51)	(21)
CSE per unit quantity	zl./kg.	(52)	(26)	(31)	(65)	(59)

n.a. = Not available.
Entries in parentheses indicate negative numbers.

Appendix table 4--Preliminary calculations of Yugoslav CSE's

Attribute	Unit	1983	1984	1985	1986	1987
Wheat:						
Total human consumption wheat equivalent	1,000 tons	4,777	4,713	4,531	4,639	4,746
Estimated wholesale price	din./ton	17,637	23,185	40,880	85,848	237,688
Free-market price	din./ton	20,357	32,923	47,917	78,049	187,736
Average price	din./ton	18,543	27,584	44,028	83,086	217,532
Cost to consumers	mil. din.	88,572	129,994	199,485	385,424	1,032,409
Wheat import price	din./ton	10,828	17,891	26,687	33,540	76,217
Policy transfers to consumers-- Border measures	mil. din.	(26,902)	(33,345)	(57,356)	(229,837)	(670,683)
CSE per unit value	percent	(30)	(26)	(29)	(44)	(65)
CSE per unit quantity	din./kg.	(8)	(10)	(17)	(50)	(141)
Barley:						
Feed use of barley	1,000 tons	360	440	405	400	n.a.
Price of feed barley	din./ton	18,810	32,760	42,180	53,000	n.a.
Cost to consumers	mil. din.	6,772	14,414	17,083	21,200	n.a.
Trade price	din./ton	14,288	30,209	37,931	61,735	119,749
Policy transfers to consumers-- Border measures	mil. din.	(1,628)	(1,122)	(1,721)	3,494	n.a.
CSE per unit value	percent	(24)	(8)	(10)	16	n.a.
CSE per unit quantity	din./kg.	(5)	(3)	(4)	9	n.a.
Corn:						
Total human consumption	1,000 tons	875	893	871	873	914
Feed consumption	1,000 tons	8,800	8,400	8,400	8,400	n.a.
Total consumption	1,000 tons	9,675	9,293	9,271	9,273	n.a.
Corn flour price, corn eq.	din./ton	16,886	26,423	42,862	84,351	n.a.
Price of feed corn	din./ton	14,960	27,220	36,920	53,000	n.a.
Average price	din./ton	16,200	28,915	40,290	61,495	n.a.
Cost to consumers	mil. din.	156,734	268,704	373,543	570,261	n.a.
Trade price	din./ton	9,960	24,818	30,162	33,087	66,948
Policy transfers to consumers-- Border measures	mil. din.	(60,370)	(38,073)	(93,898)	(263,437)	n.a.
CSE per unit value	percent	(39)	(14)	(25)	(46)	n.a.
CSE per unit quantity	din./kg.	(117)	(72)	(183)	(512)	n.a.
Beef:						
Total consumption	1,000 tons	338	344	312	312	316
Estimated wholesale price	din./ton	194,400	257,600	434,400	802,400	1,931,200
Cost to consumers	mil. din.	82,016	110,926	169,388	312,807	610,259
Trade price	din./ton	175,825	297,132	352,559	606,741	958,186
Policy transfers to consumers-- Border measures	mil. din.	(6,269)	13,618	(25,530)	(61,020)	(307,472)
CSE per unit value	percent	(8)	12	(15)	(20)	(50)
CSE per unit quantity	din./kg.	(19)	40	(82)	(196)	(973)

See notes at end of table.

Continued--

Appendix table 4--Preliminary calculations of Yugoslav CSE's--Continued

Attribute	Unit	1983	1984	1985	1986	1987
Sugar:						
Total consumption	1,000 tons	798	735	809	860	936
Wholesale price	din./ton	38,000	59,000	97,000	209,000	398,000
Cost to consumers	mil. din.	30,324	43,365	78,473	179,740	372,528
Import price	din./ton	19,122	25,799	30,391	51,943	186,646
Policy transfers to consumers--						
Border measures	mil. din.	(15,065)	(24,403)	(53,887)	(135,069)	(197,827)
CSE per unit value	percent	(50)	(56)	(69)	(75)	(53)
CSE per unit quantity	din./kg.	(19)	(33)	(67)	(157)	(211)
Vegetable oil:						
Total consumption	1,000 tons	285	271	281	377	382
Wholesale price	din./ton	75,000	125,000	210,000	433,000	769,000
Cost to consumers	mil. din.	21,380	33,875	59,005	163,258	293,758
Import price	din./ton	31,938	92,945	118,019	125,547	223,673
Policy transfers to consumers--						
Border measures	mil. din.	(12,275)	(8,687)	(25,844)	(115,922)	(208,315)
CSE per unit value	percent	(57)	(26)	(44)	(71)	(71)
CSE per unit quantity	din./kg.	(43)	(32)	(92)	(307)	(545)
Milk:						
Total consumption	mil. liters	2,294	2,324	2,254	2,388	2,411
Estimated wholesale price	din./liter	23,036	33,929	63,393	119,643	208,036
Free-market price	din./liter	29,751	45,545	76,059	153,627	276,125
Average price	din./liter	25,586	38,433	67,794	132,977	235,689
Cost to consumers	mil. din.	58,698	89,324	152,838	317,537	568,246
Import price	din./liter	16,826	27,043	38,520	54,782	160,257
Policy transfers to consumers--						
Border measures	mil. din.	(20,096)	(26,471)	(65,997)	(186,722)	(181,867)
CSE per unit value	percent	(34)	(30)	(43)	(59)	(32)
CSE per unit quantity	din./liter	(9)	(11)	(29)	(78)	(75)
Eggs:						
Total consumption	1,000 tons	242	221	212	225	229
Estimated wholesale price	din./ton	164,636	250,649	368,142	660,885	1,345,630
Cost to consumers	mil. din.	39,841	55,387	77,919	148,842	308,149
Import price	din./ton	72,742	137,611	332,446	401,624	961,836
Policy transfers to consumers--						
Border measures	mil. din.	(22,238)	(24,978)	(7,555)	(58,390)	(87,889)
CSE per unit value	percent	(56)	(45)	(10)	(39)	(29)
CSE per unit quantity	din./kg.	(92)	(113)	(36)	(259)	(384)
Pork:						
Total consumption	1,000 tons	458	524	493	556	562
Estimated wholesale price	din./ton	245,600	328,000	560,000	1,036,000	2,355,200
Cost to consumers	mil. din.	112,578	171,749	276,285	576,274	1,323,622
Import price	din./ton	109,748	160,559	260,719	570,542	811,556
Policy transfers to consumers--						
Border measures	mil. din.	(62,272)	(87,676)	(147,655)	(258,910)	(867,528)
CSE per unit value	percent	(55)	(51)	(53)	(45)	(66)
CSE per unit quantity	din./kg.	(136)	(167)	(299)	(465)	(1,544)

n.a. = Not available.
Entries in parentheses indicate negative numbers.

Appendix table 5--Domestic price definitions: Poland

Commodity	Agent	Definition
Beef	Producer	Annual average state procurement price, calculated from data in Polish statistical yearbook. This price, reported in zloty per ton liveweight, was converted to carcass weight by dividing the liveweight price by the ratio of carcass weight production (not including fat and offals) to liveweight production.
	Consumer	Estimated wholesale price calculated by subtracting budgetary subsidies paid to processors from the average producer prices.
Pork	Producer	Annual weighted average of state procurement price and free-market price, calculated from data in Polish statistical yearbook. Converted to carcass equivalent in same way as for beef.
	Consumer	Annual weighted average of free-market price and the estimated state wholesale price estimated by subtracting budgetary subsidies paid to processors from the average producer prices.
Poultry meat	Producer	Annual average state procurement price, calculated from data in Polish statistical yearbook. Converted to carcass equivalent in the same way as for beef.
	Consumer	Annual weighted average of state wholesale price, estimated by subtracting budgetary subsidies paid to processors from the average producer prices, and state producer price, interpreted here as the opportunity cost of onfarm consumption.
Eggs	Producer	Annual weighted average of state procurement price and free-market price, calculated from data in Polish statistical yearbook. Price was reported in zloty per egg; this was converted to zloty per ton by dividing by 18,188.
	Consumer	Annual weighted average of free-market price and the estimated state wholesale price estimated by discounting the officially reported state retail price by a margin of 25 percent.
Milk	Producer	Annual weighted average of state procurement price and free-market price, calculated from data in Polish statistical yearbook.

Continued--

Appendix table 5--Domestic price definitions: Poland--Continued

Commodity	Agent	Definition
Milk	Consumer	Annual weighted average of free-market price and the estimated state wholesale price estimated by subtracting budgetary subsidies paid to processors from the average producer prices.
Wheat	Producer	Annual weighted average of state procurement price and free-market price, calculated from data in Polish statistical yearbook.
	Consumer	Annual weighted average of free-market price and the estimated state wholesale price estimated by subtracting budgetary subsidies paid to processors from the average producer prices.
Corn	Producer	Annual average state procurement price, calculated from data in Polish statistical yearbook.
Barley	Producer	Annual weighted average of average state procurement price and free-market price, calculated from data in Polish statistical yearbook.
	Consumer	Annual average wholesale price paid by Polish livestock producers for feed barley, as reported in the FAO/ECE Price Review.
Rye	Producer	Annual weighted average of state procurement price and free-market price, calculated from data in Polish statistical yearbook.
Rapeseed	Producer	Annual average state procurement price, calculated from data in Polish statistical yearbook.
Vegetable oil	Consumer	Annual average state wholesale price, estimated by discounting state retail price by a margin of 25 percent.
Sugar	Producer	Annual average state procurement price for sugarbeets, converted to raw sugar equivalent.
	Consumer	Annual average state wholesale, estimated by subtracting budgetary subsidies paid to processors from the average producer prices.

Appendix table 6--Domestic price definitions: Yugoslavia

Commodity	Agent	Definition
Beef	Producer	Annual average state procurement price, calculated from data in Yugoslav statistical yearbook.
	Consumer	Annual average state retail price discounted by a margin of 25 percent.
Pork	Producer	Annual average state procurement price, calculated from data in Yugoslav statistical yearbook.
	Consumer	Annual average state retail price discounted by a margin of 25 percent.
Poultry meat	Producer	Annual weighted average of state procurement price and free-market price, calculated from data in Yugoslav statistical yearbook.
Eggs	Producer	Annual weighted average of state procurement price and free-market price, calculated from data in Yugoslav statistical yearbook.
	Consumer	Annual average free-market price of eggs, calculated from data in Yugoslav statistical yearbook.
Milk	Producer	Annual weighted average of state procurement price and free-market price, calculated from data in Yugoslav statistical yearbook.
	Consumer	Annual weighted average of free-market price and state wholesale price, estimated by discounting the state retail price by a margin of 25 percent.
Wheat	Producer	Annual weighted average of state procurement price and free-market price, calculated from data in Yugoslav statistical yearbook.
	Consumer	Annual weighted average of free-market flour price and state wholesale flour price, estimated by discounting the state retail price by a margin of 25 percent. Both prices were converted to wheat equivalent.

Continued--

Appendix table 6--Domestic price definitions: Yugoslavia--Continued

Commodity	Agent	Definition
Corn	Producer	Annual weighted average of state procurement price and free-market price, calculated from data in Yugoslav statistical yearbook.
	Consumer	Annual weighted average of the free-market price of corn flour, converted to corn equivalent, and the average wholesale price paid by Yugoslav livestock producers for feed corn.
Barley	Producer	Annual weighted average of state procurement price paid for feed barley, the state procurement price paid for brewing barley, and the free-market price, calculated from data in Yugoslav statistical yearbook.
	Consumer	Annual average wholesale price paid by Yugoslav livestock producers for feed barley.
Soybeans	Producer	Annual average state procurement price, calculated from data in Yugoslav statistical yearbook.
Sunflowerseed	Producer	Annual average state procurement price, calculated from data in Yugoslav statistical yearbook.
Vegetable oil	Consumer	Annual average wholesale price, given in Yugoslav statistical yearbook.
Sugar	Producer	Annual average state procurement price for sugarbeets, converted to raw sugar equivalent.
	Consumer	Annual average wholesale price, given in Yugoslav statistical yearbook.

Appendix table 7--Reference price definitions: Poland

Commodity	Definition
Beef	Annual weighted average of the beef export price calculated from FAO data and the export price of live cattle, converted to carcass weight equivalent.
Pork	Average annual import price, calculated from FAO trade data, converted to zloty using the official exchange rate.
Poultry meat	Average annual Hungarian export price, calculated from FAO trade data, converted to zloty using the official exchange rate.
Eggs	Average annual Hungarian import price, calculated from FAO trade data, converted to zloty using the official exchange rate.
Milk	Average annual Hungarian export price, calculated from FAO trade data, converted to zloty using the official exchange rate.
Wheat	Average annual import price, calculated from FAO trade data, converted to zloty using the official exchange rate.
Corn	Average annual import price, calculated from FAO trade data.
Barley	Average annual import price, calculated from FAO trade data, converted to zloty using the official exchange rate.
Rye	Average annual import price, calculated from FAO trade data, converted to zloty using the official exchange rate.
Rapeseed	Average annual export price, calculated from FAO trade data, converted to zloty using the official exchange rate.
Vegetable oil	Annual weighted average of import prices of soybean and sunflowerseed oil, calculated from FAO trade data.
Sugar	Average annual export price, calculated from FAO trade data, converted to zloty using the official exchange rate.

Appendix table 8--Reference price definitions: Yugoslavia

Commodity	Definition
Beef	Annual weighted average of the export price for fresh beef and live cattle, converted to carcass weight equivalent. The beef price was calculated from FAO trade data. The export price of live cattle was derived by dividing the value of cattle exports reported by FAO by the carcass weight volume given in Yugoslav statistical yearbook.
Pork	Average annual price of Polish pork imports, calculated from FAO trade data, converted to dinars at the official exchange rate.
Poultry meat	Average annual export price, calculated from FAO trade data.
Eggs	Average annual export price, calculated from FAO trade data.
Milk	Average annual export price, calculated from FAO trade data.
Wheat	Average annual import price, calculated from FAO trade data.
Corn	Average annual export price, calculated from FAO trade data.
Barley	Average annual import price, calculated from FAO trade data, converted to dinars using the official exchange rate.
Soybeans	Average annual import price, calculated from FAO trade data.
Sunflowerseed	Average annual import price, calculated from FAO trade data.
Vegetable oil	Annual weighted average of import prices of soybean and sunflowerseed oil, calculated from FAO trade data.
Sugar	Average annual import price, raw equivalent, calculated from FAO trade data.

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