STATE REGULATION OF AGRICULTURAL PRODUCTION

Finnish-Baltic Joint Seminar
Vilnius Lithuania 1992

MODELLING GOVERNMENT POLICY FOR AGRICULTURAL MARKETS IN TRANSITION

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1 Introduction

As the Baltic States of Estonia, Latvia and Lithuania enter the transition to a market economy in food and agriculture it is necessary to consider and evaluate alternative mechanisms that may be used in the regulation or stabilization of prices and incomes in the food and agricultural industry. In principle, governments of the Baltic states want to deregulate food and agricultural markets but are faced with continuing pressure from consumers to control price inflation and from farmers to increase prices. These are the same pressures faced by governments all over the world, so the new Baltic states can learn from the experiences of other countries, while considering the special conditions in these transition economies.

Modelling transition economies is especially difficult because the underlying structures of production and distribution are changing in ways that cannot always be foreseen, and historical data is of limited value in estimating the behavior of economic agents during and after the transition. Thus greater reliance on stylized models, synthetic behavioral parameters, and expert approaches are necessary.

This paper reviews the initial conditions in these transition economies, describes a few alternative policy approaches that are used on other market economies, proposes an analytical framework for evaluation of policy options for food and agricultural markets, and provides results of one such option for Lithuania.

2 Initial Conditions

The purpose here is to review briefly the conditions in the former command economy during the Soviet period and the recent changes in the economic system so that alternative policy issues can be identified and related to modelling approaches.

2.1 Production Sector

The production sector in the Soviet system was characterized by subsidized and centrally allocated inputs, subsidized output prices, and production quotas for delivery to the government processing and distribution system. Since investment decisions, production plans, and quotas were not generally driven by economic optimization, output for any particular commodity could be higher or lower than what would occur in a market economy.

In 1991 and 1992 the governments of the Baltic states removed many of the regulations and constraints that existed during the Soviet period. While these cannot be truly called free market policies, virtually all of the government subsidies and many of the government constraints on producers have been removed. Input prices are rising rapidly toward world market prices, and output prices are generally rising in response to these higher costs. The structure of production is only now beginning to change in response to economic incentives, land reform, and privatization measures. Producers are generally free to sell wherever they wish, but in reality have limited options due to the still poorly developed marketing infrastructure. The Lithuanian government still purchases up to 60 percent of some commodities to provide supplies for state institutions and export agreements.

2.2 Intermediate Sector

The processing and distribution of food and agricultural products was also subsidized in the Soviet system. These subsidies supported large inefficiencies in this sector as well. The inefficiency costs include poor equipment, high energy use, and wastage and spoilage in the handling of raw materials and processed products. In the absence of subsidies, the inefficiency of this sector causes higher consumer and lower producer prices than would occur in a well functioning market economy. This situation leads to greater political pressures on governments from producers and consumers to continue subsidies or controls. It also reduces the competitiveness of products in world markets.

As of now there has not been sufficient time for the kind of restructuring and efficiency gains that would reduce processing costs. Most of the processing is still state owned, but little if any budget support is provided to the sector. Nor has there been time for significant competition to emerge that would push processing firms to cut costs.

2.3 Consumption Sector

In some cases, consumers in the Soviet system benefitted from subsidies that exceeded processing costs. That is, the retail price of food was even below the producer price of an equivalent unit of the good. The low food prices combined with the lack of alternative goods, led to food consumption levels and dietary patterns that approached those of consumers in the West, where much higher incomes exist. Actual rationing and/or lengthy queuing at food shops was not uncommon under these policies.

With price liberalization that has occurred in 1991 and 1992, virtually all of the consumer subsidies are gone. This has led to very large price increases, which have to some extent been offset by wage increases and direct income transfers. Varying degrees of

rationing and queuing still exist for a few basic foods and the availability of non-food goods has not increased significantly. The portion of household income spent on food has increased substantially.

2.4 Trade

State trading was the norm in the Soviet period, so the level of trade did not generally reflect the excess demand and supply conditions. Exports could be subsidized by the state to generate hard currency, and imports could be restricted to conserve hard currency. The result could be seen in further rationing of domestic consumption.

Although there appears to be few import barriers, there is still a significant degree of export control for the purpose of protecting the domestic market and moderating price increases. Governments still engage in state trading, but enterprises have more freedom to conduct direct trade with enterprises in the former Soviet Union or other external markets. Export licensing is used to a considerable extent as a mechanism to control food and agricultural exports, but these requirements are gradually being softened or eliminated so that enterprises have more incentives to export.

2.5 Conceptualization of Initial Conditions

The conditions during the Soviet period and the current period are compared in Figure 1. This figure assumes constant supply and illustrates why consumer prices have to rise so much during the transition from the Soviet system to a market economy when input and product subsidies are removed. In a well functioning market economy, processing costs would be lower, reducing the gap between farm and retail prices. Comparisons of current internal prices to world market prices are still obscured by uncertainty about the exchange value of the ruble. However, since the prices of imported inputs from both East and West are approaching world market prices, output prices are also moving closer to world market levels.

3 Policy Options

As the governments of Estonia, Latvia, and Lithuania proceed with the early stages of transition to market economy systems, there are differing ideas about what kind of policy regime should be developed for the future. Should farm price supports or input subsidies be used to insure adequate farm incomes? Should import or export restrictions or border tariffs be used to protect the domestic market? Should free trade be the basis for pricing inputs and domestic products? These are difficult choices faced by governments and citizens in all market economies.

Democratic governments around the world have chosen different kinds of policy regimes. Frequently, higher income countries have adopted various forms of support or protection for farm prices and incomes, while lower income countries have tended to subsidize consumers at the expense of farmers. Measures to support farm prices or incomes with government intervention lead to either high consumer prices, high government
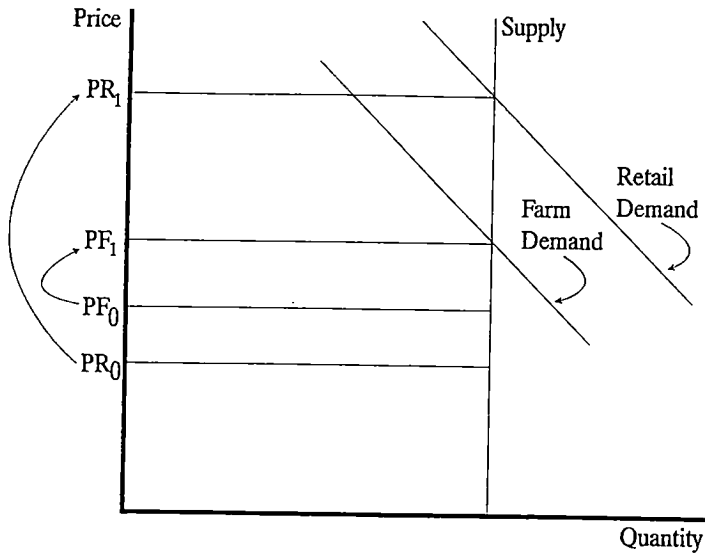
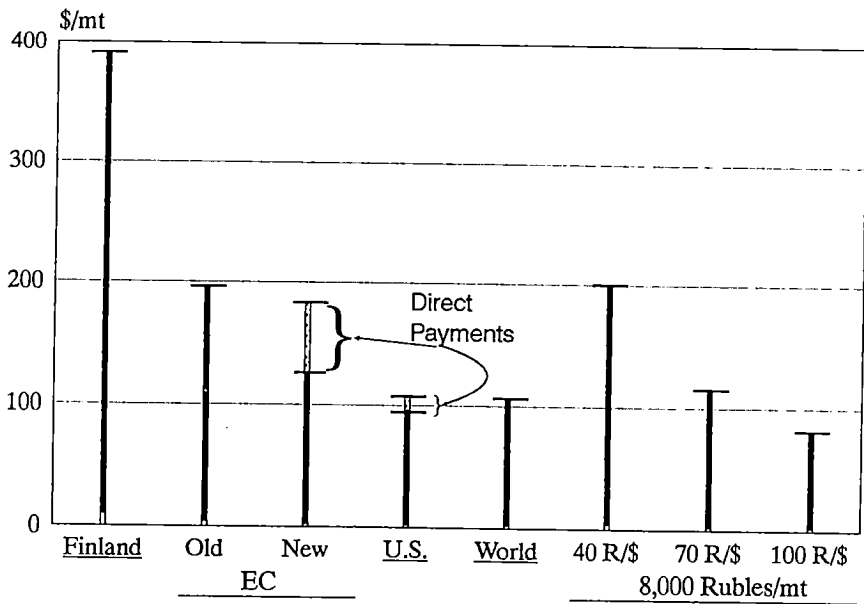*Figure 1. Price impacts of removing input and product subsidies.*

Figure 2. Comparison of Barley Price Policies.

budget costs, or both. Thus, during the last decade economic pressures and budgetary problems have led to a moderation of many of these price and income policies; and further liberalization reforms are continuing to occur in many countries.

As an illustration of differing policies, Figure 2 compares support prices for barley in Finland, EC, and US to the world market price and a Lithuanian support price of 8000 rubles/ton at different exchange rates. Three types of policy regimes are illustrated by the different approaches of Finland, EC, and US. Finland uses support prices which lead to very high food prices to consumers. The EC also has used support prices but lower than those of Finland. Because of rising surpluses, EC policies have lead to high export subsidy costs to the government as well as high food prices. In May of 1992 EC agriculture ministers approved a new policy regime which lowers support prices and compensates farmers with direct payments. The United States uses direct payments to support most crop farmers, while livestock producers and consumers face prices close to world market levels. The US and new EC policies also use land set asides to reduce surplus production.

4 Modelling Policy Options

The approach used is a short-run model of agricultural commodity markets in transition in order to provide a simple, partial equilibrium framework built on supply and use data. This model can be used to generate short-run market outlook projections and evaluate the impacts of alternative structural changes and alternative policy regimes.

4.1 Production Sector

Even if farm structure remains the same, the removal of government controls and subsidies, the adoption of new technology, changing management and incentives systems, etc. will have significant impacts on production. Given the possibility of substantial changes in the ownership and management structure, the potential changes are even greater. Thus the price effects in a typical supply equation are likely to be overwhelmed by structural and technology changes taking place during the transition period. Therefore, the supply equation needs to contain structural and technology shift variables that can be manipulated to generate alternative supply scenarios.

4.2 Intermediate Sector

Representation of the handling and processing margin and its evolution over time is important in linking the production and consumption sectors. The level of any government subsidies to processing or distribution should be included in this relationship. If a detailed model of this sector is not needed, simple linkage equations between farm and retail prices could be constructed with explicit variables for the processing margin and government subsidies. Scenarios on the time paths of these costs or subsidies could be used to trace the impacts of reducing subsidies and processing costs. Processing costs in similar sectors of existing market economies could be used as a benchmark in this analysis.

4.3 Consumption

In all of these countries household expenditure data have been routinely collected, although the quality of the data is questionable. It may be feasible to estimate demand systems with this data while also designing improved data collection methods. An alternative is to construct demand systems with subjective parameters while awaiting better quality data.

4.4 Price Determination and Policy

Alternative policy regimes will determine how prices and trade are represented in the model. As examples, four policy options are listed below along with specifications of price determination that would be appropriate:

1. If producer prices are fixed, the model is recursive and net exports or net imports are the residual.
2. If free trade is assumed, an exchange rate assumption is needed as well as the internal cost of handling commodities between the border and the farm gate. Prices are determined by the world market, and net exports or net imports are the residual.
3. With fixed tariffs, domestic prices move with world market prices of tradable goods but with a price wedge determined by the tariff rates. Prices are determined by the world market plus the wedge, and net exports or net imports are the residual.
4. If the domestic market is protected by import and export quotas, trade levels are fixed; and the model must solve for equilibrium internal prices.

5 Analytical Example

A model of the type described above was developed for Lithuania by Kazlauskiene, Devadoss and Meyers(1). More recently it was updated and revised by Kazlauskiene and Klimavichiute (2) to evaluate a scenario for 1992. The motivation for the scenario is that the difficult trade relations with the East have led to a decline in markets for meat and dairy products and the necessity to import feed ingredients from the West. Thus, except for limited grant assistance from the West, feed imports require hard currency, which is very scarce. Moreover, domestic consumption of meat and dairy products is declining; and new markets in convertible currency areas will be difficult to develop in the short run.

The assumptions of the scenario are that imported feed grains are not available, and livestock numbers and production must decline to the level that can be sustained by domestically produced feeds. Prices are assumed to increase from 1991 to 1992 at the same rate as inflation.

The results of the analysis indicate that under these conditions Lithuanian meat production and exports would decline from 1991 to 1992 by 18.3 percent and 47.3 percent, respectively. Milk production would decline by nearly 22 percent, and the export of milk and milk products would decline by 57 percent. Feed use would decline by 17 percent, and the only grain imports would be for human consumption--a decline in grain imports of over 60 percent. While this result is not a forecast of what would happen without

imported feed grains, it does provide an internally consistent outcome that would achieve the assumed policy objectives.

6 Conclusions

There are many problems and limitations to be encountered in the modelling of food and agriculture in transition economies such as Estonia, Latvia, and Lithuania. It may not be possible to model the transition process itself, but modelling the transition at various stages and evaluating alternative policy impacts does seem feasible and useful. Such simple and stylized models will provide useful tools for analysis and for learning about market behavior in these economies.

References

(1) KAZLAUSKIENE, N., S. DEVADOSS, and W. H. MEYERS. "An Adaptive Policy Simulation Model to Analyze Price Reforms for Lithuanian Food and Agricultural Products," Technical Report 91-TR-20, Center for Agricultural Development, Iowa State University, Ames. June 1991.

(2) KAZLAUSKIENE, N., and RAUINTA KLIMAVICIUTE. "Lithuanian Agriculture: Wishes and Reality," Lietuvos Aidas, "May 26, 1992.

The participants had the opportunity to learn about the past way of life in Lithuanian countryside as they visited the Ethnograpic Museum in Rumsiskes.

The participants made an excursion as far as Kaunas. Kaunas, which is the second largest town in Lithuania, was the capital of the independent Lithuania in 1918-1939.