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Analysis of agricultural policy in Russia

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Analysis of agricultural policy in Russia

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by

Sergei Stokov

A thesis submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

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Sergei Stokov
has met the thesis requirement of Iowa State University

Signatures have been redacted for privacy

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CHAPTER 1. INTRODUCTION

1.1 Background

Prior to the new economic policy, which began with the liberalization of prices in 1992, Russia experienced permanent food shortages, though Russian per capita consumption of major food products was relatively high. These shortages were caused by low retail prices that stimulated consumer demand in excess of supply. Prices in retail stores and personal incomes were strictly regulated by the government. However, the statistical data show that income growth was generally higher than price growth.

Before the economic reforms in the early 1990s, the production side of the food sector and other sectors of the national economy were centrally planned. Results of centralized planning were low worker incentives, low input productivity, poor quality of products, extensive waste, and a centralized system of output procurement and input distribution. This production system, which consisted of large agricultural enterprises (sovkhozes and kolkhozes), has been transforming very slowly. The first stage of farm reorganization mainly involved superficial rather than substantial changes. Agricultural enterprises were required to register in accordance with new legislation, which meant in actuality that they simply changed their names to "joint-stock companies," "companies with limited responsibility," or "cooperatives," without significant changes in production or management structures. The organization, the management, and incentive systems for these farms have only begun to change as they have been forced to rely more on self-financing and

have become more responsible for marketing their outputs.

Since the economic reforms began, the main development has been the gradual transformation of the state procurement system, allowing for a growing share of farm outputs to be marketed through emerging new market channels. These new channels, however, are in the initial stages of formation and often involve inefficient barter arrangements. The system of commodity exchanges for supporting domestic markets has also been slow in developing. Agrarian reform has promoted the creation of private farms but their development has been limited by economic conditions. By the end of 1994, 279,000 private farms were established, and they produce only 3 percent of total agricultural output.

Furthermore, the agricultural sector still suffers from the absence of important institutions including land markets, a legal and regulatory framework for the financial and banking system, market information services, and adequate social welfare programs for those individuals unable to adjust to the reform-induced economic dislocations in the countryside.

Evidence is emerging that indicates that market forces are beginning to work in the Russian agricultural economy. Although the restructuring of large agricultural enterprises and the development of peasant farms and land reform have been limited, the general economic reforms have created the beginnings of a market environment for agricultural goods and services. Price liberalization, demonopolization of international trade, and a more balanced fiscal and monetary policy have stimulated a substantial restructuring of food consumption, agricultural production, and trade. Since 1992, a balance between supply and demand for agricultural products has been established. Consumer demand has become the driving force

for production and trade.

In the crop sector, producers have sharply reduced input use. Farms have responded to price liberalization by using inputs more efficiently. Yields have fallen proportionally less than input use. However, the current structure of the livestock sector is generally inefficient for production in the new economic environment. As a result, both the numbers of livestock and poultry, and production levels have declined significantly in recent years.

Since prices were liberated, consumer prices have increased more than the average income, thereby lowering the average real incomes of citizens. Consumers have reduced their demands for meat and other livestock products and have switched to less expensive foods such as cereal products and potatoes. However, the average total caloric intake of the Russian population has not changed significantly.

The reforms have dramatically altered Russian foreign trade in agricultural products. Russia has sharply reduced its grain imports. In 1992, grain imports totalled 29 mln. tons. In 1994, they fell to 2 million tons. At the same time, Russia has become an importer of large quantities of high-value products including meat products, chocolate bars, convenience foods, etc. In 1994, meat product imports were 5 times larger than in 1993: 854 thousand tons and 159 thousand tons, respectively (Russian Statistical Yearbook, 1995, p.435).

1.2 Problems

Economic reforms have changed the nature of agricultural policy. Before the reforms the agricultural policy was a part of the general centrally planned system. The main

goal of this system was to maintain supplies of food at fixed, low prices for final consumers. Predetermined consumption quantities were used as planning targets. The production system was created and managed to satisfy this goal. Agricultural enterprises received a plan of production and a plan of marketing together with fixed prices for outputs and inputs. Thus, the agricultural policy resulted from goals of maintaining both farm incomes and low and stable food prices coupled with production targets.

The general belief at the time of the reforms was that this system was inefficient and needed to be changed. To make production more efficient, agricultural producers required free pricing and marketing for outputs without production and procurement plans from the federal government.

During the economic reforms prices were freed and production plans were eliminated. However, agricultural producers found that in the framework of the new economic environment their enterprises became unprofitable and could not survive without continued external support. Consumers also reacted negatively to the increasing food prices. The result was a transitional agricultural policy based on two driving forces: providing consumers with "socially acceptable" prices, and providing production units with economic conditions suitable for profitable production and survival.

One aspect of the economic reforms was to give the regional governments more freedom. The federal government rejected pressures to establish national price controls in the retail sector to satisfy consumers. However, some regional governments introduced policies to limit prices for basic food products. Meanwhile, agricultural producers became more

organized and forced both the federal and local governments to initiate programs of support. A variety of these programs have been introduced: direct subsidies, government purchases, preferential credits, import tariffs, etc. However, the situation in the agricultural sector has not improved in response to these policies and subsidies. Production has been declining, debts of farm enterprises have been growing, and food imports have become larger and larger although grain imports have declined..

Reacting to this situation, agricultural producers have pushed for added support. However, the federal and local governments have been unable to provide the "required" level of funding. Experts and governmental officials understand that the main problem is the inefficient structure of agricultural production and of the industries that provide inputs to agriculture. In general, the efforts and programs introduced to make policy and institutional changes have not brought significant results in terms of sector performance.

Agricultural policy has also been contradictory in nature. Often goals were not coordinated with the tools, and the results were the opposite of those intended. Agricultural policy measures were often characterized as "emergency care" without serious analysis and preparation, without taking into consideration the new economic environment and new incentives for consumer and producer behavior. For example, the introduction of preferential credits led to corruption and use of these financial resources for other than agricultural production purposes.

There has also been a problem in measuring the economic effects of agricultural policies. A variety of methods have been developed to estimate the impact of agricultural

policies in other market-oriented economies. However, Russia is not a country with a developed market economy. That is why, the methods and approaches acceptable in other countries produced results that are sometimes not reliable in Russia. Furthermore, applications of standard, internationally recognized methods such as producer subsidy equivalents as measures of support for agriculture may provide an incorrect representation of the situation in the agricultural sector of Russia.

Another problem with policy formation has been an unsophisticated view that government interventions necessarily cause economic losses and reductions in the efficiency of production and consumption processes. However, this view does not reflect the problem of market failures. In the case of market failures, government policy can play a role in more efficient allocation of resources. The government intervenes to support markets and reduce economic and social losses. This situation (market failure) is typical for economies in transition from centrally planned to market economic environments.

If one considers an ideal free market situation, several factors can cause failure: eg. imperfect competition, external economies, and government intervention. The same factors apply when describing market failures for transition economies where enterprises enter the market without changing the structure inherited from a centrally planned economy. For large agricultural enterprises there are no opportunities for free entry and exit. They have large fixed capital created to produce a particular variety of agricultural products. Opportunities to change this structure are limited, due to an absence of asset markets, and may require new investments. In the United States, agriculture is becoming more and more concentrated

following gradual changes in the economy. In Russia, however, the level of concentration in agriculture does not reflect the economic condition after the reforms. Moreover, Russian agricultural producers have to compete with foreign producers who are better equipped to survive in the market framework.

In Russia, smaller agricultural production units do not have large fixed capital but their ability to move from agriculture to another economic activity is limited. In general, the labor resources employed in small agricultural units cannot be easily employed by other sectors of the economy. Also, externalities are significant to their business activities. For example, the well-being of private subsidiary farms and private (peasant) farms depends on the activities and performance of large agricultural enterprises.

Russian agriculture is a product of decades of a centrally planned system. The experience during the first few years of economic reform has shown that the production infrastructure has barely adapted to the new economic environment. The absence of government support could lead to an economic disaster for the sector and related industries. Therefore, government policy in some cases can be considered as a set of measures to fix these market failures. Also, agricultural policy analysis should consider situations of market failure in order to accurately estimate the degree to which the Russian government should intervene in the sector.

Since the beginning of the reforms, government policy has targeted support toward large agricultural enterprises. However, during the economic reform the structure of agricultural production has moved toward smaller enterprises. Thus, this strategy does not

necessarily support the entire agricultural sector. Therefore, agricultural policy may need to be altered toward the new realities in production and consumption.

1.3 Objectives

The primary goal of this thesis is to analyze the agricultural policy in Russia during the first years of transition, the early 1990s, using the methods and instruments of market economic theory. The specific objectives are:

1. To describe the general development of the national economy and agricultural sector in Russia in the early 1990s;
2. To provide an analysis of the transitional agricultural programs using standard microeconomic theory;
3. To estimate the overall effect of agricultural policy on the sector using producer subsidy equivalents (PSEs); and
4. To evaluate the implications of this policy analysis and PSE estimations for Russian agriculture.

1.4 Organization

This study is organized in five chapters. Chapter 1 explains the background and problems of Russian agriculture, and objectives of the study. Chapter 2 presents a quantitative review of the developments in the Russian national economy and the agricultural sector in the early 1990s, including a description of farm structure, shifts in production, and

changes in consumption and foreign trade. Chapter 3 provides an analysis of major agricultural programs: price supports, input subsidies, farm credits, and import tariffs. Chapter 4 discusses the problems of the application of PSE methodology to Russian agriculture and reports the results of PSE calculations for the sector during the period from 1992 to 1994. Chapter 5 summarizes the major conclusions of the study and includes proposals for policy and further research.

CHAPTER 2. AGRICULTURE AND THE FOOD MARKET IN RUSSIA

2.1 Agriculture and the national economy

Historically, the agriculture has occupied a significant part of the Russian economy. In 1990, before the economic reforms began, agriculture produced 16 percent of the gross domestic product (GDP). About 13 percent of the national labor force was and remains in agriculture. Twenty six percent of population continues to reside in rural areas and agricultural enterprises remain the major employers in these areas (Table 2.1).

Since the introduction of new economic policy in Russia in the early 1990s, the macroeconomic conditions for agriculture have changed dramatically. The abolishment of the centrally planned economy and the introduction of market economic structures have affected the sectors of the national economy in different ways. The absence of production and procurement plans has given managers of agricultural enterprises freedom to make their own production and marketing decisions. However, they immediately found that they had lost the customary markets. Before the economic reforms, the state has been the main buyer of agricultural commodities. In accordance with the new "rules of the game," the agricultural enterprises in Russia were given the freedom to produce and the freedom to sell at prices that cleared the market.

The macroeconomic changes have also had a significant impact on the Russian agricultural sector. During the period 1990-94, prices rose sharply.

Table 2.1 . Agriculture and the national economy, 1990 through 1994.

	1990	1991	1992	1993	1994
Agricultural share of GDP, %	15.5	13.8	7.4	8.4	6.5
Rural population, mil.	38.7	39.0	39.8	39.9	39.9
Percentage of the total population that is rural	26.0	26.0	26.7	26.9	26.9
Employed in agriculture, mil.	9.7	9.7	10.1	10.1	10.1
Percentage of total employment that is in agriculture	12.9	13.1	14.0	14.3	14.6

Sources:

Social and economic performance of Russia. 1993-1994, p.27

Production and economic data on agroindustrial complex of Russia in 1994, p.5

Russian Statistical Yearbook. 1994, p.61

Statistical Handbook 1995. States of the Former USSR, p.419

However, price increases have not been the same in other sectors of the economy. Prices for agricultural commodities have experienced relatively low growth. During the period 1990-94, industrial prices increased approximately 3 times more than agricultural prices, construction prices - 3.5 times, and transport tariffs - 5 times (Table 2.2). As a result, the agricultural share in the GDP fell from 15.5 percent in 1990 to 6.5 percent in 1994. At the same time, the industry share of the GDP decreased from 43 percent to 28 percent, and the share of services increased from 32 to 50 percent of the GDP. These structural changes favoring the service industries can be positively interpreted because this sector of the economy is likely to lead the transition to a market economy.

Table 2.2 Price deflators for GDP, 1990 through 1994 (1990=100)

	1990	1991	1992	1993	1994
Total GDP	100	229	3635	35918	150933
Industry	100	244	3719	43290	151349
Construction	100	258	3662	40123	189122
Transport	100	179	3112	37648	269661
Agriculture	100	200	1596	17238	54330

Source: Statistical Handbook 1995. States of the Former USSR, p.425

The important fact is that agricultural production measured in real prices has had the lowest production decrease among large sectors of the national economy. During the period 1990-1994, GDP in real prices fell by 35 percent, industry output - 47 percent. Agricultural output during the same period decreased by 29 percent (Table 2.3).

Table 2.3 National and sector indices of production, 1990 through 1994 (1990=100)

	1990	1991	1992	1993	1994
Gross Domestic Product	100	95	81	74	65
Industrial output	100	92	75	67	53
Agricultural output:	100	91	87	77	71
- crop production	100	100	95	92	90
- livestock production	100	93	82	77	70

Sources: Russian Federation in 1992, p. 14

Russian Statistical Yearbook, 1994, p.12

Social-economic performance of the Russian Federation in 1993, p.7

One of the main effects of economic reform for the crop sector has been a large drop in input use (fertilizer, pesticides, machinery, and fuel). Before the economic reforms began, the government heavily subsidized input use. As a result, input use per unit of production was high compared to other countries. Since the introduction of a market economy, the efficiency of the agricultural sector has increased. The use of external inputs in agriculture measured in physical units has fallen at a greater rate than production. Therefore, the efficiency of resource use has been increasing. The data in Table 2.4 demonstrate this effect. In the agricultural sector, the relative efficiency of production for almost all major resources has increased. For the period from 1990 to 1993, the per unit consumption of gasoline dropped by 57 percent, diesel fuel by 27 percent, etc.

2.2 Farm structure

The common belief among foreign researchers is that agricultural output in Russia is being produced by large agricultural enterprises (sovkhozes and kolkhozes). However, in general, this assumption is not correct.

At present, there are three forms of agricultural enterprises in Russia (Table 2.5). One group consists of 25,000 large agricultural enterprises (LAE). LAEs have an average agricultural area of 5800 ha¹ and a labor force of 300 employees. In 1994, LAEs have produced about 60 percent of the agricultural output. Approximately 38 percent of total output is produced by private subsidiary farms (PSF) consisting of 16.5 million

¹ 1 ha = 2.47 acre

Table 2.4 Efficiency of agricultural production, 1990 through 1993
(physical units of resources per unit of gross output)

	1990	1991	1992	1993
Electric power supply	0.65	0.73	0.80	0.82
Gasoline	0.11	0.11	0.11	0.07
Diesel fuel	0.19	0.20	0.19	0.15
Mineral fertilizer	0.11	0.10	0.06	0.04
Organic fertilizer	4.68	3.58	3.05	2.73
Purchase of tractors	1.40	1.35	0.74	0.46
Purchase of grain combines	0.37	0.33	0.19	0.17
Purchase of trucks	0.95	0.86	0.55	0.27

Sources: calculated by author based on data in the Russian Statistical Yearbook, 1995.

Table 2.5 Number of agricultural producers, 1990 through 1994 (thousand)

	1990	1991	1992	1993	1994
Large agricultural enterprises	25.8	25.5	26.6	26.9	26.8
Private subsidiary farms	16256	17128	19288	16553	16582
Peasant farms	4.4	49.0	182.8	269.9	279.2

Sources:

Production and economic data on agroindustrial complex of Russia in 1994, pp. 34

Russian Statistical Yearbook, 1994. pp. 343, 346, 361

Russian Statistical Yearbook, 1995. p. 356

produced on PSFs is being marketed. The revenue from private production provides a significant part of household incomes.

About 2 percent of total output is produced by the new private farms (peasant farms), which have an average area of 40 ha and an average labor force of 3 persons. The first peasant farms were established in 1990 after the introduction of the law "On peasant farms." As of 1994, 279,000 peasant farms were registered. However, some of them do not produce a significant quantity of agricultural commodities. Moreover, the development of this sector of agriculture has slowed considerably. In 1994, the number of newly created farms was about the same as the number of farms that were liquidated, demonstrating that not all peasant farms can survive as private businesses under current economic conditions.

In accordance with the existing land cadastre, most agricultural land is owned by LAEs (Table 2.6). PSFs own a small share of the land compared with their share in production. Often this situation is interpreted as an indicator of the extremely high efficiency of these farms. However, in general this conclusion is not correct. First of all, the land cadastre lists land plots that are officially registered to particular households (usually land around a house). But, at the same time, rural families also make extensive use of land plots that are owned by LAEs. The common practice is to use land on LAEs in accordance with "informal" agreements. There is no procedure to include this information in official statistics. As a result, total land use by PSFs is underestimated.

During the transition period, significant changes have occurred in the structure

Table 2.6 Distribution of agricultural land by farm type, 1990 through 1994 (mil. ha)

	1990	1991	1992	1993	1994
Large agricultural enterprises	202.4	186.3	162.8	157.9	155.8
Private subsidiary farms	3.2	4.6	6.8	5.8	6.1
Peasant farms	0.2	2.1	7.8	11.3	11.9

Source: Russian Statistical Yearbook, 1995. p. 352, 356, 357

of agricultural production among various types of producers. The share of PSFs in total agricultural output increased from 24 percent in 1990 to 38 percent in 1994 (Table 2.6).

Certain production relationships and even a distribution of roles in agriculture exist between LAEs and PSFs. LAEs produce most of the grains (94 percent). Meanwhile, PSF are the major producers of potatoes (82 percent) and vegetables (64 percent), and a significant portion of animal products (Table 2.8).

Agricultural producers have become more specialized during the period of economic reform. The LAE share in the production of potatoes became insignificant and PSF share in

Table 2.7 Share of agricultural output by farm type, 1990 through 1994 (percent of total output)

	1990	1991	1992	1993	1994
Large agricultural enterprises	76	72	66	63	60
Private subsidiary farms	24	28	33	35	38
Peasant farms	-	-	1	2	2

Sources: Russian Statistical Yearbook, 1995. p. 351

Table 2.8 Production shares by farm type in 1993 (percent)

	Large agricultural enterprises	Private subsidiary farms	Peasant farms
All grains	94.2	0.6	5.2
Potatoes	16.5	82.5	1.0
Vegetables	34.5	64.5	1.0
Meat	59.4	39.5	1.1
Milk	64.2	34.7	1.1
Eggs	73.0	27.0	0.0

Sources: Russian Statistical Yearbook, 1994. p.353, 365.

animal production has been increased substantially. From 1990 to 1994 the number of cattle on LAEs decreased by 26 percent, hogs - 40 percent, sheep - 44 percent. At the same time, the numbers of animal on PSFs has increased : cattle by 26 percent, hogs by 27 percent, and sheep by 9 percent (Appendix A, Table A.1, p.98).

However, the different types of agricultural producers do not act independently.

Usually, LAEs provide substantial resources to support production on PSFs. The contribution of resources by LAEs is made in the form of additional land for pasture, feed supply (free or at preferential prices), machinery rental, and fuel with preferential prices. This cooperation is mutually beneficial because LAEs can obtain input supply more easily than PSFs, while the efficiency of input use on private farms is sometimes higher than on LAEs in the current economic environment. As a result of this redistribution of resources, PSFs have increased their overall production by 15-20 percent. Meanwhile, production of the LAEs has fallen by 43 percent (Table 2.9).

Table 2.9 Indices of production by farm type, 1990 through 1994 (1990=100)

	1990	1991	1992	1993	1994
All producers	100	95	86	83	76
Large agricultural enterprises	100	91	75	68	57
Private subsidiary farms	100	109	118	121	115

Sources :

Russian Statistical Yearbook, 1994. p.341

Social-Economic Performance of Russia. 1993-1994. p.62

2.3 Shifts in production of agricultural commodities

A general feature of the Russian agricultural sector during the transition period has been a drop in the production of almost all commodities. However, these tendencies differ from product to product. The annual average production of wheat during 1991-94 compared to 1986-90 dropped by 10 percent while vegetable production decreased by almost twice this percentage. Only the production of potatoes remained stable at about 36 million tons (Table 2.10).

A major portion of the drop in crop production is related to a reduction of the total planted area. In 1994 agricultural producers used 105 million ha of arable land compared with 118 million ha in 1990 (Appendix A, Table A.2). Crop yields have not changed significantly. For example, the annual average grain yields in 1991-94 were comparable to those in 1986-90. Only the sugar beet yield fell significantly during the period, dropping from 225 centner/ha² to 167 centner/ha (Appendix A, Table A.3). It is important to emphasize that at

²1 centner = 0.1 metric ton

Table 2.10 Production of major agricultural commodities, 1986 through 1994 (mil. tons)

	1986-1990*	1991	1992	1993	1994	1991-1994*
All grains	104	89	107	99	81	94.0
Wheat	44	39	46	44	32	40.3
Sunflower seed	3.1	2.9	3.1	2.8	2.6	2.9
Sugar beet	33	24	26	26	14	22.5
Potatoes	36	34	38	38	34	36.0
Vegetable	8.1	5.6	4.5	3.4	3.1	4.2
Fruit and berries	2.6	2.2	2.8	2.7	2.1	2.5
Meat (liveweight)	14.8	14.5	12.9	11.9	10.9	12.6
Milk	54	52	47	46	43	47.0
Eggs (mil.)	48	47	43	40	37	41.8
Wool	0.22	0.20	0.18	0.16	0.12	0.2

* - annual average

Source: Production and Economic Data on the Agro-industrial Complex of Russia in 1994, part 1, pp. 11, 19

the same time the use of fertilizer has fallen by almost 10 times. However, only sugar beet production was significantly affected by this drop in fertilizer use.

Animal agricultural production has undergone more dramatic changes. Since the reform began, meat production has fallen about 50 percent, milk production - 30 percent, egg production - 23 percent, wool production - 54 percent. This drop in the production of animal products has been connected mainly with the decrease of inventories, which have fallen about 20 percent. In addition, contrary to the stable productivity of crops, the

productivity of animal herds fell substantially. In 1994, milk yield per cow was 21 percent lower than in 1990. The unit productivity of cattle herds in meat production has decreased by 26 percent (Appendix A, Table A.3).

These tendencies in animal production can be interpreted as a result of deliberate state policy to expand the sector during the past decades. The number of animals increased more than 60 percent from 1970 to 1990. However, the growth of domestic feed production was not adequate to support the increased herd. To accommodate growing animal production, the former Soviet government substantially increased imports of feed. When the reform began, the Russian federal government stopped the centralized import of feed. The animal sector faced a dramatic deficit of feed and the associated increase of feed prices on the domestic market. As a result, agricultural producers decreased production on large animal complexes that require a massive external supply of feed, including feed concentrates.

Animal production has gradually shifted to the PSFs which were able to organize efficient production of animal commodities using available resources. To a large extent these resources were available to the PSFs as a result of in-kind payment to workers on the LAEs.

2.4 Changes in food consumption

Since the economic reform began, consumer prices for food have risen substantially, more fully reflecting the real, unsubsidized cost of production. In fact, prices rose not only for foodstuffs, but for all consumer goods and services. The aggregate growth in consumer prices has exceeded income growth, thereby reducing real incomes (Table 2.11). In 1992,

Table 2.11 Indicators of per capita consumer income and inflation, 1991 through 1994

	1991	1992	1993	1994
Income, thousand rubles	0.45	4.0	45.2	206.3
Income growth (to previous year, %)	...	888	1130	455
Consumer Price Index (to previous year)	...	1310	940	320
Cumulative income growth	1	9	99	452
Cumulative CPI	1	13	123	394

Source: Russian Statistical Yearbook. 1994, p.80, 296

when price liberalization began, the difference between income growth and inflation was the most significant. Real income dropped by almost 50 percent. However, in 1993 and 1994 the average level of inflation was lower than income growth. As a result, real income gradually increased during this period.

Data from budget surveys show that per capita consumption of meat and meat products in 1994 was down about 10 percent from 1991; milk consumption - 16 percent. Consumption of vegetables and fish products experienced the most significant decrease: 25 percent and 30 percent, respectively. Consumption of cereal products rose by 10 percent, and consumption of potatoes rose by 26 percent (Table 2.12).

Despite the shifts in food consumption patterns, average total caloric intake has changed little on average. Daily caloric intake decreased from 2430 kcal in 1991 to 2310 in 1994. The share of animal products in total caloric intake decreased from 34 percent to 31 percent during the same period. However, certain social groups, particularly those on fixed

Table 2.12 Annual per capita consumption of food products, 1991 through 1994
(based on budget surveys, kg)

	1991	1992	1993	1994	1994/ 1991
Cereal products (bread, etc)	100.6	103.9	107.4	110.4	1.10
Potatoes	98.1	106.6	112.3	123.6	1.26
Vegetables and gourds	86.4	78.0	76.3	65.0	0.75
Fruits and berries	34.5	29.3	30.9	32.1	0.93
Meat and meat products	65.3	57.9	57.3	59.0	0.90
Milk and milk products	348.5	294.2	305.1	294.0	0.84
Eggs, items	229	243	236	215	0.94
Fish and fish products	14.1	11.5	11.3	9.8	0.70
Sugar and confectionery	29.1	26.4	29.1	32.0	1.10
Oil and other greases	6.2	6.8	7.4	5.8	0.94

Source: Social-Economic Performance of Russia. 1993-1994. pp.208-209

incomes (such as pensioners), have seen a major decline in the quality of their diets.

The allocation of the consumer budget has changed as well. The share of a household's spending for foodstuffs has increased from 38 percent in 1991 to 44 percent in 1994 (Russian Statistical Yearbook, 1995. p. 98).

2.5 Agricultural trade

Two major features characterize the changes in agricultural markets in Russia. First, the centralized procurement system controlled by the federal government has essentially been eliminated. Second, domestically produced agricultural commodities have been substituted

extensively for imported food products.

Before the economic reform, the government was dominant in the agricultural markets. The procurement system was intended to maintain government control of the country's accumulation and distribution system. The federal government defined procurement prices and quantities for marketed commodities, except in the case of city markets.

One of the goals of agrarian reform has been to liberalize agricultural markets. In 1992, the Russian federal government lifted wholesale and retail price controls for a significant number of commodities. At the same time, the procurement system was restructured. The federal government continued to purchase grains, but agricultural producers were not obligated to sell grains to the government. They did, in fact, because the government owned all of the elevators. In 1994, the quantity of grain that agricultural producers sold to local and federal governments was only 36 percent as much as in 1986-90. The governments were buying insignificant quantities of sugar beets, sunflower seeds, vegetables and potatoes by 1994 (Table 2.13).

Currently, the purpose of state procurement is to ensure a sufficient food supply to major cities (Moscow, St. Petersburg, etc.), to some northern and far eastern territories, and to the military. At the same time, regional governments have become more active buyers of wheat from local and other agricultural enterprises. The main purpose of local government purchases is to secure an appropriate supply of bread and cereal products to local cities and towns. Thus, the governments remain, in a changed form, a major actor in the markets.

Table 2.13 Government purchase of agricultural commodities, 1986 through 1994 (mil. tons)

	1986-1990*	1991	1992	1993	1994	1994/86-90
All grains	34.3	23.6	26.1	28.2	12.4	0.36
Wheat	17.9	13.1	12.6	15.2	8.1	0.45
Sunflower seed	2.4	1.8	1.2	0.7	0.2	0.08
Sugar beet	28.8	18.7	10.7	7.1	0.9	0.03
Potatoes	8	4.8	3	1.7	0.5	0.06
Vegetable	7.4	4.5	3	2.1	1.5	0.20
Meat (liveweight)	11	9	7	6	4.7	0.43
Milk	39	34.2	26.1	24.6	18.9	0.48
Eggs (billion)	33.9	30.5	24.3	24.3	20.4	0.60
Wool, thousand tons	110	101	65	70	73	0.66

* - annual average

Source: Russian Statistical Yearbook, 1995. pp.364, 373

Grain exchanges and private commercial firms have appeared as new channels of accumulation and distribution. In some regions they play a significant role in trading wheat and other grains. In the early 1990s, about 200 organizations were established that called themselves "commodity exchanges." However, they have been gradually transformed into trading companies. In 1994, only a few of these organizations even somewhat resembled western commodity exchanges. However, the trade on grain exchanges is currently not developing because the wheat market is mainly monopolized by governmental agencies and by so called joint-stock companies, which were established on the basis of facilities of

former state procurement and processing enterprises.

Traditionally, a large part of production has been used for in kind payment to workers. Workers use their shares of produced grain mainly to feed their own animal. Typically, an agricultural worker has one or two cows, a few steers, a few pigs, sheep, and poultry. These animals are raised on subsidiary plots and account for major shares of private production.

A large amount of traded wheat is sold on local wholesale markets. These markets include sales and exchanges between farms or between farms and elevators or processors. The conditions of these sales are mostly unknown to the public. Many are made using barter to avoid taxation or to limit government involvement.

Despite progress in the deregulation of Russia's agricultural markets, barriers remain that prevent the creation of a liberalized market for agricultural commodities. Many regional authorities artificially maintain local food prices at lower levels through subsidies, obligatory procurements, and restrictions on commodity movement. The role of the local governments has become important with the increase in their responsibilities for distributing subsidies and credits.

Another important feature of agricultural trade in Russia is that imported agricultural products continue to play a significant role in foreign trade, and provide a substantial share of the supply of food products to the domestic market. Since economic reforms began, the total volume of imported agricultural commodities has fallen significantly from about 17 billion USD in 1990 to 6 billion USD in 1993. However, the share of these commodities still equals

Table 2.14 Import and export of agricultural commodities, 1990 through 1994

	1990	1991	1992	1993	1994
Agricultural import, bln. USD	16.6	12.4	9.6	5.9	8.6
Share of agricultural import, %	20.3	27.9	26.0	22.2	30.4
Agricultural export, bln. USD	1.5	1.3	1.6	1.6	2.1
Share of agricultural export, %	2.1	2.6	3.9	3.8	4.2

Source: Russian Statistical Yearbook. 1995, p.432

more than 20 percent of total imports. Moreover, there is a trend to increase the import of agricultural commodities. For example, in 1994, agricultural commodities and foods reached 30 percent of total imports. At the same time, the value of agricultural export has changed little. In 1990, Russia exported 1.5 billion USD in agricultural commodities, and in 1994 it exported 2.1 billion dollars. Meanwhile the share of agricultural exports in total export rose from 2.1 percent to 4.2 percent (Table 2.14).

The economic reform has significantly restructured the composition of foreign agricultural trade. While Russia has substantially decreased imports of bulk commodities, eg. feed grains, its imports of high-value food products, eg. animal products, have surged.

In 1994, Russian grain imports fell to only about 2 million tons compared with 29 million tons in 1992. The new economic policy of the Russian government has played a major role in this change. Stricter fiscal and monetary policies, along with a large foreign debt, have ended the practice of providing subsidized resources for domestic consumers, including agricultural enterprises as consumers of feed grain. In addition, a strong agrarian lobby has

pressured the government to reduce grain imports. Agricultural producers have tried to force the federal government to use its funds to support Russian farmers, rather than purchasing grain from abroad.

During the same period, the imports of high-value products rose sharply. The import of animal products increased by nearly two times. For example, poultry meat imports surged from 46,000 tons in 1992 to about 500,000 tons in 1994 and 800,000 tons in 1995 (Appendix A, Table A.7, p.105). There are three major factors that have influenced this process. The reform-induced emergence of a new upper class has contributed significantly to the rise in Russia's demand for high quality food. The second factor has been the appreciation of the real ruble/dollar exchange rate. The inflation rate in Russia has exceeded exchange rate growth. Russian incomes measured in dollars have increased and purchasing power of consumers for foreign goods has risen. The third factor has been that liberalization of foreign trade has enabled private traders to respond quickly to the changing demand for foreign as well as domestic goods.

It is important to note that the growth and change in the structure of agricultural and food imports has taken place in spite of a relatively high level of import tariffs. Due to the pressure from the agrarian lobby, the government imposed a 15 to 20 percent import tariff for meat and dairy products, vegetable oil, sugar, and butter. Nevertheless, Russia is now the largest importer of U.S. poultry meat, and the second-largest importer of U.S. pork. These trends will likely continue until the reforms are consolidated, especially in the processing and distribution sectors.

CHAPTER 3. ANALYSIS OF AGRICULTURAL PROGRAMS

3.1 Background

An analysis of agricultural policy in Russia during the recent period of economic reforms cannot be undertaken without taking into consideration previous agricultural development. The agricultural policies of past decades that were carried out under the centrally planned system created an economic structure and a system of incentives inconsistent with a market economy. In the early 1990s, the Russian agricultural sector was a highly concentrated and increasingly inefficient system of production and distribution. The food market was highly distorted by governmental policies of controlling prices at relatively low levels. Since the mid 1960s, sustaining low food prices and highly concentrated agricultural production has required larger and larger subsidies, resulting in severe structural imbalances in the food and agricultural economy.

These imbalances were not evident in the framework of a centrally planned system. Only when Russia launched its economic reform, after the dissolution of the USSR, did the Russian government discover that the food market and the agricultural production sector reacted differently to the new economic environment. While food product markets adopted price liberalization relatively quickly, the agricultural sector has not been able to respond to the challenge of the reform. As a product of several decades of a centrally planned economy, the agricultural production and distribution systems failed to adapt to the new economic conditions. Considering that one third of the Russian population resides in rural areas and

that agricultural enterprises are major employers of the labor force, the Russian government tried to implement a set of programs to create conditions for a gradual transformation of the structure of agriculture to a that of a market economy.

It is important to consider these circumstances in order to draw accurate conclusions from the analysis of agricultural programs. In most cases, the intent of government intervention was not to distort the markets but to fix market failures. Furthermore, a major human element was involved in the process of creating and implementing agricultural policy. Governmental officials, scientists, and specialists involved in this process were products of the previous system. They are accustomed to thinking about agriculture in nonmarket terms. Most of them believed and still believe that without government intervention the entire agricultural region and branches of production will die, jeopardizing not only the incomes of local populations but national food security.

The purpose of this analysis is to better understand selected agricultural programs by using market economy theory. In reality, the agricultural sector operates in a economic environment with a number of features typical of a market-oriented economy and market failures. This analysis will emphasize the analysis of incentives for the government and agricultural producers. Also, the analysis will point to important problems and the results of government interventions for Russian agriculture.

3.2 Structure of agricultural policy and the agricultural budget

The agricultural policy of the Russian government in the first half of the 1990s can be interpreted as having had two directions. The first is a strategic, long-term policy that targeted deep restructuring of the food market, the agricultural sector and industries that provide inputs and process agricultural commodities. In this policy direction, the government denationalized land and liberalized retail and wholesale prices, implemented legal and economic conditions for the creation of private farms, launched privatization and the restructuring of large agricultural enterprises (former sovkhozes and kolkhozes), and eliminated the state monopoly over domestic and foreign trade of agricultural products.

This long-term agricultural policy was first adopted in 1990 as a part of a program of agrarian reform. After 1990, this program was modified almost every year. Sometimes there were two or even three new programs named "the program of agrarian reform." These programs were developed by different groups of specialists with different views on how the reform should progress. In reality, the federal government did not implement these programs. Usually regional governments adopted their own programs of agrarian reform and that did not differ significantly from the federal program. The most recent version of the federal program of agrarian reform was adopted in 1994.

This program points out a few major reasons for establishing governmental support of agriculture:

- unstable technological and institutional relationships;
- absence of government control on prices and wages;

- inflation and the growing cost of credit;
- the budget deficit and a reduction in governmental financing;
- a reduction of the purchasing power of consumers;
- an increase in arrears between producers;
- uncompetitiveness of agricultural products on international markets; and
- a lack of legal support ("The Program of Agrarian Reform in the Russian Federation in 1994-1995").

The program established the general goal of agrarian reform in Russia "to provide food and agricultural products with publicly acceptable prices on the basis of creating institutional, economical and financial conditions for efficient functioning of the agro-industrial complex, the creation of an agrarian market, social recovery in rural areas, and the establishment of ecological equilibrium." ("The Program of Agrarian Reform in the Russian Federation in 1994-1995").

The second direction of Russian agricultural policy involves short-term or sometimes crisis-driven programs to prevent negative developments, from the government's point of view, in the agricultural sector and in the food market. These programs include price support and "minimum guaranteed prices," input subsidies, preferential credits, commodity credit, debt write-off, interest rate subsidies, state orders, import tariffs, capital investment, and others. These policies have been introduced in the form of government decrees that have been adopted each year. The analysis of these programs illustrates the influence of governmental practices in a centrally planned economy. For example, these programs established the

provision of a certain level of production of major agricultural commodities, as an important state task. However, these targets were not obligatory for agricultural producers. Usually these decrees proclaimed the main directions of governmental policy for the year. In particular, they stipulated the amount of financial support of agriculture. During the year the government issued detailed documents to facilitate the actual fund transfer to the agricultural sector.

It is a complex task to determine all government expenditures connected with agriculture. There are four types of associated problems. First, not only the federal government but the regional governments had budget expenditures for agriculture, and information on regional activities is not complete. Second, the government sometimes delayed payment of subsidies and other financial transfers. Thus, the actual amount transferred was not the same as that allocated in the budget. Third, some expenditures, such as write-offs, were not included in the budget for a specific year but were reflected in an increased state debt. Fourth, some programs, such as commodity credits, involved deferment of budget revenue, meaning that budget transfers to agriculture were not from the expense side of the budget but from the revenue side.

Selected expenditures associated with the agricultural sector can be described using available information. Direct transfers to agriculture were 7 percent of the federal budget in 1993 and 9 percent in 1994. In 1995, the share is expected to be at a significantly lower level, about 4 percent. (Review of Agricultural Policy, Market and Trade Development in Russia in 1995, p.7.) The largest portion of the budget spending consists of subsidies to agricultural

Table 3.1 Agricultural budget of the Russian Federation, 1994 and 1995
(billion rubles)

	1994	1995 (projected)
Ministry of Agriculture, total expenses	6,466	5,266
- state support to all agricultural producers	4,283	3,127
- state support to animal producers	207	176
- state support to crop producers	782	600
- education	460	516

Source: Ministry of Agriculture of Russia

Table 3.2 The structure of subsidies for the agriculture and food sector from the federal budget, 1992 through 1995 (billion rubles)

	1992	1993	1994	1995 (projected)
Subsidies for livestock production	163	*	*	*
Subsidies for pedigree livestock		39	208	280
Compensation for elite seeds		5	52	100
Fertilizers and chemical subsidies		120	350	981
Fuel subsidies for greenhouses		16	50	100
Subsidies for wool production			150	374
Feed subsidies		290	150	700
Other	70	153	183	246
TOTAL	233	623	1143	2781

* - transferred to local budgets

Source: Ministry of Agriculture of Russia

producers, accounting for 66 percent (see Table 3.1).

The structure of federal subsidies to agriculture has been changing over time. In 1992, major resources were allocated to support prices for animal production and to compensate for expenditures associated with fuel and lubricants. In 1993 and 1994 the federal budget subsidized mainly pedigree animal production, fertilizer and chemical expenditures, and purchases of concentrated feed for large animal complexes and for regions hurt by the drought (Table 3.2).

In addition to subsidies, major federal spending in 1993 and 1994 included interest rate compensation. In 1995, "trade credit," debt write-offs, and compensation for the cost of machinery were the most expensive programs. On the regional level, the support of animal production was the main budget expenditure for agriculture.

3.3 Price support programs

3.3.1 Output-linked subsidies to animal producers

Subsidies to animal producers were introduced in March 1992. Initially they were paid by the federal government, but in 1993 the program was canceled. However, most of the regional governments introduced their own programs to support animal production. In 1994, local budgets paid 2,060 billion rubles¹ in subsidies for animal products to large agricultural enterprises - 55 percent of total subsidies for Russian agriculture (Kholod L.).

¹ Annual average exchange rate: 1992 - 205 ruble/USD, 1993 - 962 ruble/USD, 1994 - 2276 ruble/USD

The levels of subsidies and the procedures for distributing them have varied from region to region and have been dependent on local factors not connected with agriculture. The process of subsidizing agriculture has depended on the performance of industry in the region, the level of influence of agricultural authorities in a local government, and the level of general federal subsidies (subventions) for the region. Thus, the subsidizing of agriculture has been conducted to a large extent without guidance from the federal government and without a uniform approach. The result has been that the establishment of independent regional policies constrained the development of national trade of agricultural commodities. The same market-defeating process was repeated in 1993. Procurement prices for animals have been depressed because of output-based subsidies, a concentrated processing sector, and the price-taking behavior of agricultural producers

There were two opportunities for agricultural producers to sell animal products: through market channels and through government procurement. However, subsidies were paid only for products sold through government procurement. An agricultural producer was

Table 3.3 Subsidies for animal production from federal and local budgets (bln. rubles)

	1993	1994
Cattle and poultry	431	890
Milk	404	935
Eggs	78	160

Source: Ministry of Agriculture of Russia

entitled to receive a fixed payment per unit of a product. The structure of animal production subsidies is presented in Table 3.3. (Detailed information on subsidies for the animal sector is presented in Appendix A, Table A.6, p. 103)

Subsidies for animal production were introduced because the federal and local governments shared the common belief with producers that animal production could not operate under new price relations for inputs and outputs. Due to increasingly higher prices for inputs, relative prices for animal products decreased. The current structure of production was created with an other set of relative prices. Most enterprises discovered that their production structures could not operate efficiently with new relative prices.

This situation is depicted in Figure 3.1. Assume that agricultural enterprises are price takers. For each farm there is a perfectly elastic demand. In Figure 3.1, demand is represented by a horizontal line. When the relative price for a product decreases from P to P' , production on farm 1 (with supply curve S_1) and farm 2 (with supply curve S_2) becomes unprofitable: their supply curves do not intersect with the demand curve at all. With the new price for the product, farm 3 (supply curve S_3) would produce significantly less.

In reality, almost all large animal complexes have experienced this kind of "market dilemma." However, smaller and more flexible agricultural producers have been able to restructure production and marketing to meet the demand for animal products under the new economic conditions.

It was assumed that the subsidies would increase agricultural producer incentive prices and, in turn, income, taking into consideration the given demand in final consumption.

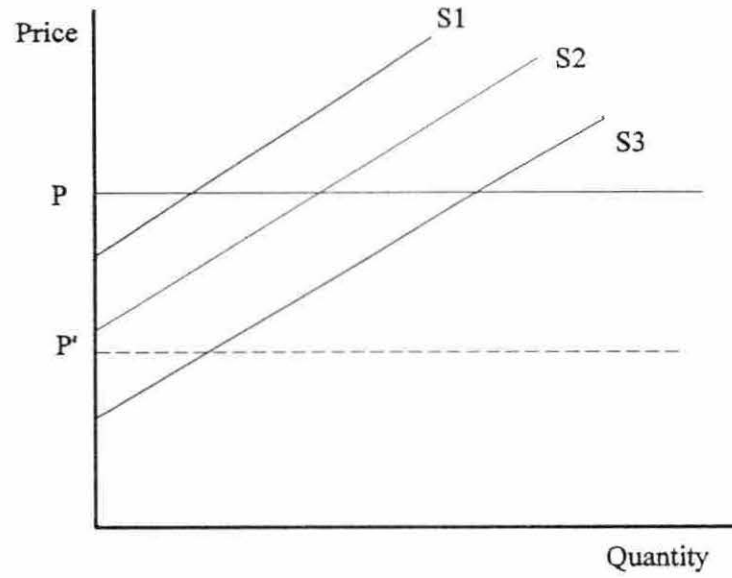


Figure 3.1 Agricultural enterprises and market demand

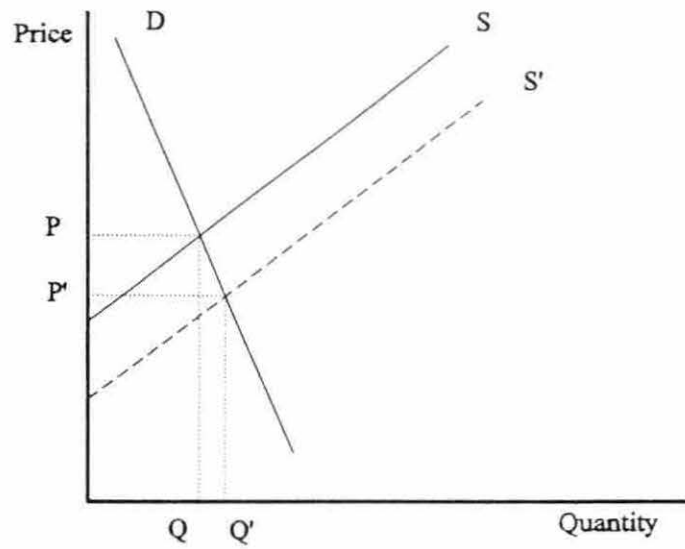


Figure 3.2 The effect of subsidies on industry supply and prices

However, in practice, the subsidies did not work this way, and, according to economic theory, could not work.

Because all large agricultural producers were eligible to receive subsidies, government intervention stimulated the shift of industry supply (see Figure 3.2). In this case, the industry supply curve faces the down-sloping aggregate demand curve (D). The downward shift in supply causes both a production increase and a price drop. If the demand is inelastic in this range, which is typical for animal products, the overall effect will be negative for producers, because the price drop is greater when production increases.

The situation described is for agricultural producers operating in competitive markets. However, there is another situation, common in Russia, in which farms face a processor with downward sloping demand for animals. During the previous period of economic development, it was assumed that a high level of concentration in the food industry would allow for more efficient production. For this reason, large agricultural producers sometimes have just one processor available in their vicinity.

Consider a typical case for Russia, when a large agricultural enterprise sells cattle to a processor (see Figure 3.3). At various times, the processor has a specific demanded quantity for the input D (live cattle) at a given price. The desire to receive immediate return from subsidies drives agricultural producers to significantly increase the supply of raw agricultural products to processors, causing the supply curve to shift from S_0 to S_1 . Accordingly, a wholesale price for raw agricultural product falls from W_0 to W_1 . The greater the subsidy,

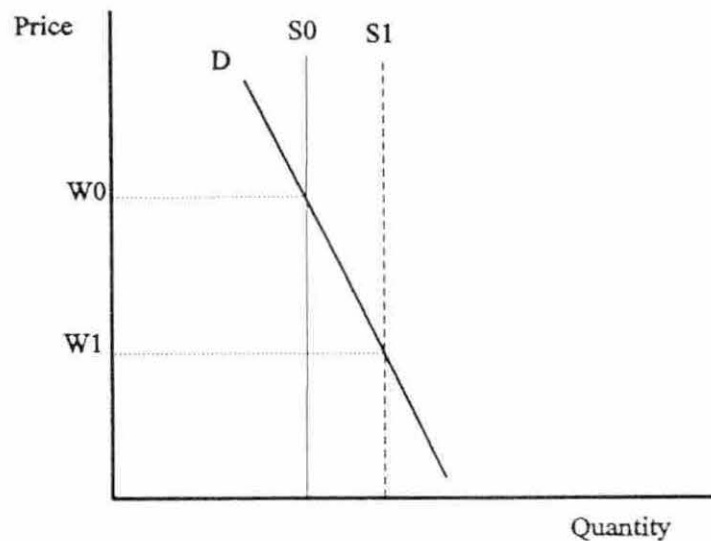


Figure 3.3 The effect of subsidies on an animal producer facing a processor's demand

the greater the shift of the supply curve, in turn, the greater the shift of supply curve, the greater the fall in the procurement price. The price difference ($W_0 - W_1$) is gained by the processor. Agricultural producers will lose unless the per unit subsidy is higher than the price difference.

During March and April 1992, after the government announced the introduction of subsidies, the average procurement price for animals decreased from 20.75 to 16.56 rubles per kilogram (Price Handbook... 1992, p.4)². In real terms (Consumer Price Index (CPI) change for these two months equaled 1.59), the price declined by 79 percent. During the same period, retail prices for meat fell by only 54 percent. Therefore, relative to retail prices,

² Unfortunately, the Russian Statistical Committee combines the wholesale procurement prices for cattle, hogs, and poultry into one figure.

wholesale prices for animals declined by 46 percent. The subsidy for all animals was approximately 30 percent of the wholesale price. In other words, due to government intervention, agricultural producers lost 16 percent of per unit revenue for animals compared to the period before intervention.

If these assumptions are correct, processors receive all these subsidies plus additional gain from the increased margin between farmgate and retail prices. Therefore, in both situations the policy of subsidizing animal production leads to a price decrease for agricultural producers and may cause the decrease of total revenue. The approach that would best serve producer interests would be to correct the market failure due to market power in the processing sector.

3.3.2 Minimum guaranteed prices

During the period of 1994-1995, the agrarian lobby in the Russian parliament tried several times to introduce "minimum guaranteed prices" for agricultural producers. However, this program was not enforced by the federal government, because after a long period of discussions and approval, these proposed minimum prices in most cases were below market prices.

Nevertheless, it is useful to consider the consequences of this type of policy. Using the supply and demand framework, it can be shown that a minimum guaranteed price has dual results (see Figure 3.4). First, higher prices stimulate producers to increase output of agricultural products. The excessive quantity of food products on markets, compared with an

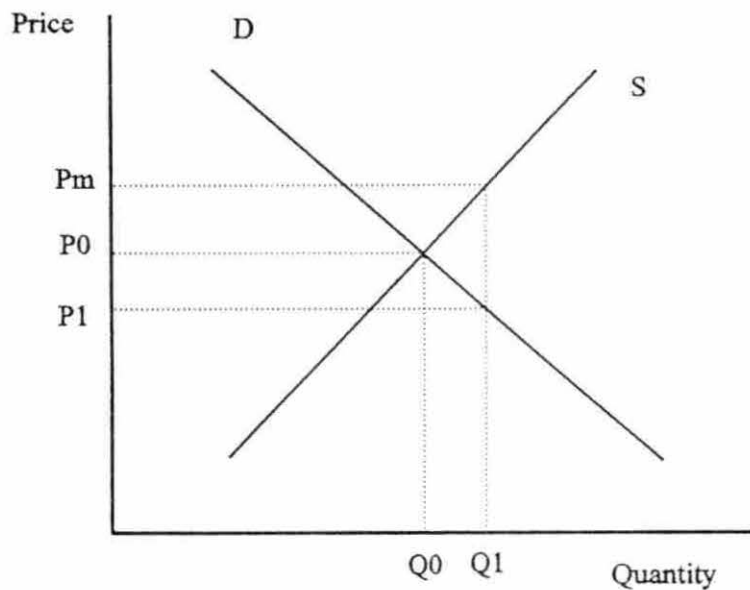


Figure 3.4 The effect of minimum guaranteed prices

equilibrium level, causes prices to fall. Consumers' benefits in these markets can be significant, depending on the elasticity of demand. A more inelastic demand results in a greater decrease in price. In effect, government spending for the program would not be the product of $(P_m - P_0)$ and Q_0 (which is how some politicians would present it) but the product of $(P_m - P_0)$ and Q_1 . The magnitude of the last value depends on the elasticity of demand and supply. A high level of inelasticity of demand and a high level of elasticity of supply would result in extremely high government spending to maintain such a program. The reverse effect of the program can be a significant increase of taxes that will depress consumer demand and the production of other commodities.

3.4 Input subsidy programs

3.4.1 Direct input subsidies

Partial compensation for input expenditures has been another major governmental program to support the agricultural sector. In accordance with this program, agricultural producers receive compensation for inputs used to produce commodities to be sold to the government.

Again, one should note that in reality a so-called "government purchase" means the amount of products sold through officially controlled channels, for instance, processors or consumer cooperatives. These are the only channels where the government can control the quantity of commodities for which input subsidies are paid. Therefore, the expenditures connected with production of commodities sold through other markets (city markets, to other agricultural producers, etc.) cannot be compensated. The related regulations during the period 1992-95 have allowed for the following compensation:

- 50% of fuel for greenhouses;
- 30% of fertilizer and pesticides;
- up to 10% for concentrated feed (Decree #240, 1995);
- fixed compensation per unit for the purchase of pedigree animals;
- fixed payment per standard animal unit for farms producing pedigree animal.

Table 3.4 Agricultural input subsidies, 1995 (billion rubles)

	1995	Share of total, %
Pedigree animal	280	12
Seeds	100	4
Fertilizer and pesticides	490	21
Power supply and fuel	100	4
Concentrated feed	700	31
Other	621	27
TOTAL subsidies	2,291	100

Source: Ministry of Agriculture of Russia

Input subsidies have occupied a significant share of total subsidies for the agricultural sector (see Table 3.4). These programs can be considered as well as measures to support other industries that have been affected by a severe reduction in demand of all inputs by agricultural producers. However, the introduction of input subsidies has had self-defeating results. After the announcement of the policy to subsidize inputs, all producers of inputs for agriculture sharply increased their prices.

This can be explained by the fact that the supply of agricultural inputs is relatively inelastic, and that the input supply sector has a significant local monopoly power. Figure 3.5 shows that input subsidies cause an upward shift in the input demand. However, due to an inelastic supply the prices may increase faster than the volume of use.

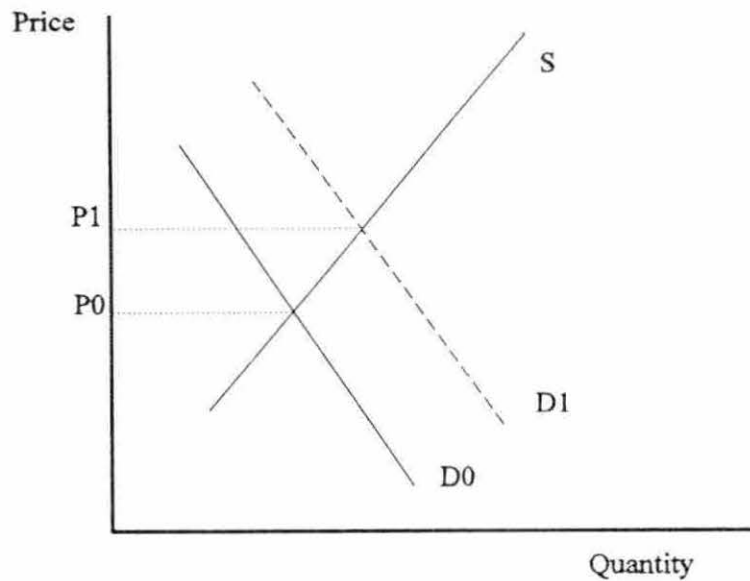


Figure 3.5 The effect of input subsidies

There are some objective reasons why input supply is inelastic. In the early 1990s, domestic prices were lower than world prices, and imports could not compete in domestic markets. Input suppliers, in general, were monopolists in the production of specific inputs (eg., two companies produced grain harvesters, three companies produced tractors). Sometimes, they are also monopsonists in providing employment for workers in regions in which the plants are located. Because their output is not perishable, they can accumulate inventories. For instance, mineral fertilizer production has an inelastic supply on the domestic market, but it can be exported in large quantities. As monopolists, producers can always compensate for reduced demand by raising prices. At some point, demand limitations will restrict further price increases.

In a competitive market environment it would be reasonable to assume that, in order to increase production of the input, producers would restructure and lower costs, and then bring input prices down. However, in reality, some input producers have simply gone out of business, causing significant growth in local unemployment (for example, most fertilizer producers have simply cut production or shut down their plants). Others have pressured the federal and local governments for direct financial support to prevent the shutdown of plants and further unemployment (for example, the grain harvester producers in Rostov-na-Donu and Krasnoyarsk).

The one reason for the implementation of the input subsidy policy was to release the burden of price scissors (price disparity) between resource costs and output prices for agriculture. However, completely opposite results have been achieved: price disparity has increased significantly. In order to estimate the changes in price disparity between agricultural inputs and products, the output price-input cost ratio has been calculated for grain (Table 3.5).

As shown in Table 3.5, after price liberalization beginning in 1992, the price disparity decreased. This change was favorable to agricultural producers, because they had to sell fewer units of output to buy a unit of input. After introduction of the input subsidy policy, the output price-input cost ratio increased. In the second half of 1992, it became greater than before government intervention. In 1993, when this intervention was continued, the price disparity became even greater.

Table 3.5 The output price-input cost ratio for grain, 1991 through 1993
(tons per unit of input)

	1991	1992		1993
		first half	second half	
Grain harvester	44	38	54	87
Tractor	35	31	37	56

Source: Ministry of Agriculture of Russia and Kiselev S.

3.4.2 Indirect input subsidies in the form of "leasing programs"

In 1994, the federal government introduced a new policy to support demand for inputs for agricultural producers; the so-called "leasing program" was launched. Prior to the adoption of this program, input subsidies were received by producers directly. In accordance with the new program, the government chose one organization, ROSAGROSNAB, which ordered inputs from suppliers and distributed them to regional authorities in return for contracts for long-term repayment (with subsidized interest rates). The list of supplies was determined by the Ministry of Agriculture and the agricultural departments of the regional administrations. This program called for the restoration of a distribution system resembling that of the former centrally planned economy.

This situation is another example of a government attempt to fix a market failure: the supply curve of a producer of agricultural machinery and equipment derived from its production function does not intersect with the demand curve derived from production function of an agricultural producer. As a result, large agricultural producers created to

operate with a significant number of tractors, combines, planters, etc., have practically stopped purchasing new machinery. However, without this equipment they cannot exist for long as producing units. By introducing the "leasing" programs the federal government tried to "warm up" the market for agricultural equipment.

In effect, the program did not eliminate price disparity but instead accelerated this process. ROSAGROSNAB, using monopoly power, increased input prices by 10 to 40 percent. Moreover, the opportunity to distribute resources by bureaucratic methods has created some sources for corruption, and as well led to a political rather than an economic basis for resource allocation. Thus, the input subsidy program has not solved the financial problems of agriculture. To some extent, it has only deepened the financial crisis in agriculture through stimulating increased price disparity.

3.5 Agricultural credit

During this transition period the federal government and local authorities have used several methods to establish a credit system for agricultural production: preferential loans, trade credit and investment credit. The reasons for introducing these credit policies were the same as that for animal output subsidies and the subsidies for agricultural inputs. In the new economy, agricultural producers found that they were unable to obtain and pay off loans that were supplied by a quickly reorganized financial system.

The problem with making loans for agricultural producers is recognized in all countries and is caused by the nature of agricultural production. Most developed countries

have created agricultural credit systems to provide loans with lower interest rates for agricultural producers. The Russian federal government has also been trying to create a credit system to provide loans with acceptable interest rates for agricultural producers. Here the problem is linked to the weakness of reform in the asset market. To borrow at a reasonable interest rate and for an appropriate period, agricultural producers must have equity, which will not be available without more complete privatization.

3.5.1 Preferential credit

Price liberalization and tight macroeconomic policy increased interest rates for loans. Agricultural producers, accustomed to credit resources from the federal budget with low interest rates, were unprepared for this increase. The first shock was the complete unavailability of the long-term loans that are necessary financial resources for agriculture, an industry with a long production cycle. During this period, commercial banks preferred to provide short-term loans, eg., 1 to 3 months in the absence of collateral for security. The second shock was the high interest rates, which limited investment in the current system.

In 1992, the federal government responded to the issue by allocating low-interest centralized credit for agricultural producers. In the beginning, a differential rate was applied: 28 percent for large agricultural enterprises and 8 percent for private (peasant) farms. At the same time, the average interest rate in the economy was about 100 percent. In 1993, the government introduced a uniform preferential credit for all agricultural producers with a 28 percent interest rate. By contrast to the Central Bank rate for refinancing was 180 to 230

percent.

To understand the results of this policy it is necessary to discuss what kind of incentives it provides. Credit resources with preferential interest rates require rationing. The federal government establishes limits for the regions, and the regional governments have the authority to distribute these financial resources among the agricultural producers. For this reason, the quantity of loans available to an agricultural enterprise is defined by a "good relationship" with local authorities and the bank responsible for providing loans, rather than the efficiency of the farm. Also, regional governments use the control over credit resources to establish specific conditions for marketing agricultural products within their respective regions. In exchange for low-interest loans, agricultural enterprises are sometimes obligated to sell preliminarily defined portions of their marketed products to the local government for so-called "regional food funds." These funds are, then, in fact, used as instruments to support low prices for most important foodstuffs in the regional retail markets.

Bureaucratic control over credit resources is a well-known method of supporting production inherited from the centrally planned economy. Modern government officials favor this approach because it allows them to recover the influence over producers that was lost during the economic reforms. Also, this system stimulates corruption and inefficient allocation of budget resources.

Compared with commercial loans, preferential credits together with rationing may provide perverse incentives for producers. Commercial loans force agricultural producers to compete with other sectors of the economy for financial resources. In general, this strategy

stimulates the intensive restructuring of production and marketing that, in turn, creates conditions for the growth of efficiency in the framework of the new economic environment.

To carry out restructuring and new marketing tactics require significant changes in personal behavior not only for farm managers but for ordinary workers as well. The process of eliminating habits and customs based on a centrally planned economy and learning to become efficient under new economic conditions can be painful and contradictory. Whether or not it is the existing attitudes or the poorly functioning asset markets that limit the restructuring is a still unanswered question.

On the other hand, "hunting" for preferential credits does not require changes in the production and marketing structure. Neither does it demand agricultural managers to change their personal behavior. Agricultural managers are accustomed to dealing with local authorities to obtain limited resources. Another important characteristic of this system is that it supports the existence of large agricultural enterprises and only partly supports the emerging private (peasant) farms. Private subsidiary farms are not eligible to receive loans with low interest rates. Thus, the system of preferential credits helps large agricultural enterprises to survive but it does not encourage managers to adapt to new approaches to management.

Moreover, due to a lack of control in procedures for the distribution of agricultural credits, these funds were widely used by both local authorities and agricultural producers for purposes other than agricultural production. The typical situation was that some commercial firms and banks proposed to managers of agricultural enterprises to invest their money in

higher profit activities or simply to deposit the money in a high interest account. Of course, by accepting these proposals the managers were personally rewarded, but in most of cases the money never reached agricultural production. It should be noted that in the absence of strict loan procedures, in a market economy subsidized financial resources will go to businesses with higher opportunity costs. The above-mentioned situation with preferential credits indicates that agricultural managers responded to the market without any problem as long as they had the opportunity to use budget money. However, when they discuss agriculture, the typical argument is still the same: Russian agriculture it is not ready for a market economy and agricultural producers need government investment to restructure agricultural enterprises.

The federal government eliminated preferential credits for agriculture in the fall of 1993. However, in many regions, local authorities introduced their own programs to provide noncommercial loans to the LAEs and processing enterprises. Therefore, the changed federal government policy has not altered producer behavior in general.

3.5.2 Write-offs as forms of direct subsidy

The write-off and extension of repayment of their debts by agricultural producers has become a serious problem for the Russian banking system, which now operates in a highly competitive environment. During the period 1992-93, the federal government ordered the write-off or extended repayment of about 20,000 billion rubles, a value that exceeded the agricultural share of gross domestic product (GDP). This government action sharply reduced bankers' faith in the integrity of loans to the agricultural sector and also reversed the

trend toward financial responsibility among producers. Even such a giant as the former state Russian Agro-Industrial Bank (ROSAGROPROMBANK), which traditionally financed the agrarian sector, now holds less than half of its portfolio in agricultural loans.

The write-offs have increased the internal debt, which, as an inflationary factor, once again has struck the agricultural sector with its long production cycle. Also, the system of unconditional and unselective writing-offs of agricultural debts has not provided LAEs incentives to restructure production and marketing. In fact, just the opposite is the case. This policy has distorted the market of commercial credit. Having the knowledge that sooner or later all debts will be written-off, managers of agricultural enterprises may feel free to take as many loans as possible to improve the situation in the short-run and may not have attended to the procedures required to pay off these loans. Also, agricultural managers have not tended to use these resources entirely for agricultural purposes, having the opportunity to invest in other more profitable business activities and to receive personal benefits.

Two major conclusions can be made about the agricultural credit policy. First, keeping in mind the restructuring of large agricultural enterprises and the reform of the entire agricultural sector, the federal government, along with regional governments, did not introduce a credit policy for agriculture consistent with the market reforms. Second, current policies of preferential credits and write-offs do not provide new incentives for agricultural producers, thereby maintaining the inefficient structure of the agricultural sector.

3.6 Import and export tariffs

Strong regulation of foreign trade and the monopoly of the state were features of the former Soviet government. The Russian government, which has demonopolized foreign trade, inherited the willingness to control this process. There are two major reasons for the government to regulate foreign trade: to protect domestic producers, and to raise additional revenue for the budget.

Before the economic reforms, the Soviet government used subsidized imported commodities extensively to provide cheaper goods for consumers and resources for producers. Prior to 1993, foreign trade was still controlled by governmental agencies and the Russian government regulated prices for some food products. About 36 commodities, including butter, cheese, milk powder, meat products, vegetable oil, sugar and flour were subsidized on the domestic market. Imported inputs for agricultural producers were also heavily subsidized.

During 1993, due to the demonopolization of foreign trade, subsidies on imported commodities were mainly removed and former governmental agencies that dealt with international trade were eliminated or reorganized into joint-stock companies. Only about six months were required to recognize that importing could provide some food products cheaper for consumers than domestic producers, without subsidies. Since the beginning of 1994 the federal government has experienced significant pressure from the agrarian lobby to protect domestic agricultural producers and the food industry from relatively cheap imported foodstuffs.

At the same time the Russian government realized that there was a tendency to increase the export of some agricultural products that have been in shortage on the domestic market. Thus, in 1994 the federal government introduced both import and export tariffs for selected food commodities. The highest import tariffs have been imposed on wool (30 percent), sugar (25 percent) and poultry (25 percent) (see Table 3.6).

The short-run impact of the introduction of these tariffs can be analyzed using standard theory. Consider the imposition of import tariffs because selected imported products

Table 3.6 Import and export tariffs for selected agricultural commodities, 1995

Import tariffs		Export tariffs	
Wool	30%	Wheat, durum	17%
White sugar	25%	Sugar beet	15%
Poultry	25%	Sugar	60 ECU/t
Butter	20	Corn	10%
Meat and meat products (except poultry)	15%	Wheat, other varieties	7%
Milk and dairy products	10-20%		
Oil seeds	5-10%		
Vegetable oil	15%		
Fruits	5-10%		
Grain	1%		

Source: The Decisions of the Government of the Russian Federation #454, 6.05.95 and #858, 31.08.95

such as sugar, vegetable oil, poultry occupied significant parts of domestic market while agricultural export was not crucial.

Assume that the domestic supply and demand for a specific product clear the market with a higher price than the world price for the product. The world price is considered perfectly elastic in the short run. This situation is depicted in Figure 3.6. After the introduction of an import tariff, the domestic price becomes higher and moves from P_w to P_t on the graph. Compared with the situation before the introduction of the tariff, domestic producers will be able to sell more of this commodity (Q_t instead Q_w) and will receive a higher price. At the same time, consumers will face a higher price and will accordingly reduce

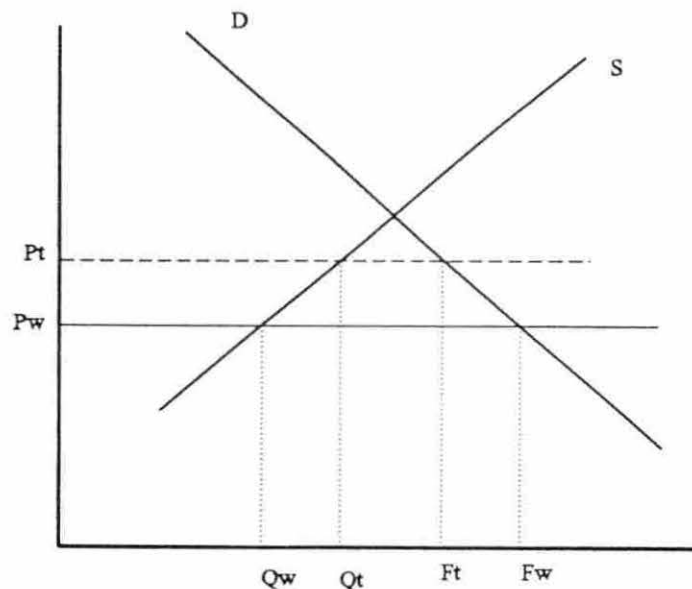


Figure 3.6 The effect of import tariff

consumption from F_w to F_t . The government as well as the producers gain. Import duties measured as a product of $(F_t - Q_t)$ and P_t go to the budget.

The results of the introduction of an effective import tariff are straightforward: domestic producers and the government gain while consumers lose. For this reason, the policy has been heavily criticized by the authorities of the large cities that have been the main consumers of imported foodstuffs. During 1994 there was a serious struggle between two influential forces in policy making: the agrarian lobby and leaders of large cities represented mainly by the mayors of Moscow and St. Petersburg. After some delay, the federal government introduced reduced rates for import tariffs. However, in the middle of 1995, import tariffs were again increased. The average tariff for agricultural products rose from 13 to 15 percent. Import duties were also expanded on the entire list of imported food products.

Despite the obvious losses for consumers, the federal government has decided that support of domestic producers and additional budget revenues are preferable to lower prices on domestic food markets, especially in the major cities.

CHAPTER 4. EVALUATION OF SUPPORT TO AGRICULTURE

4.1 Review of previous works

The analysis of agricultural policy often includes the estimation of its overall effect on the performance of domestic agriculture. The best known and internationally adopted method to appraise the effect of all policy instruments is the producer subsidy equivalent (PSE). Recently this kind of analysis was conducted for Russian agriculture (Liefert, et al.). The general conclusion was that "the estimated values are highly negative, indicating that Russian agriculture has been heavily taxed." The authors state that this result derives from the following factors: "First, government trade and price policies, at the regional as well as the federal level, have operated to keep domestic producer prices below world prices. Second, the deficient Russian physical and institutional infrastructure has resulted in high domestic transaction costs for Russian agricultural output. To compete with goods on the world market, Russian producers must bear all the costs of getting their output to final users. These high transactions costs in an economic sense also tax domestic production" (Liefert, et al, p.2). The final results of this analysis are presented in Table 4.1.

However, the conclusion and supporting arguments, together with the data chosen for these calculations, raise some doubts and concerns about the consistency of this analysis and the conclusions. In order to make these concerns more clear we need to analyze in more detail both the principles of the PSE approach and the specific features of the agricultural structure and markets in Russia.

Table 4.1 Estimates of PSEs for Russian agriculture, 1992 through 1994
(percentage per unit value)

	1992	1993	1994
Beef	-1162	-449	-363
Pork	-680	-175	-136
Poultry	-432	-58	-31
Milk	-918	-467	-310
Eggs	-635	-209	-79
Wheat	-399	-292	-341
Corn	-120	-103	-24
Barley	-277	-187	-304
Sugar beets	-482	-184	-108
Sunflower seeds	-164	-322	-173

Source: Derived from Liefert, et al., pp.13-14

4.2 The concept of PSE

The PSE method was initially developed by Professor Tim Josling for the Food and Agricultural Organization of the UN (FAO) in the early 1970s (Cahil, Legg). It was adopted by Organization For Economic Co-operation and Development (OECD) in implementing the 1982 Ministerial Trade Mandate. PSEs were initially calculated for a set of OECD countries consisting of Austria, Australia, Canada, the European Economic Commonwealth (EEC), Japan, New Zealand, and the United States. The purpose of calculating PSEs was to provide in a single, all-inclusive measure, the transfers to the agricultural sector from the rest of the economy arising from government policies.

For each product, the PSE for a given category of support represents the value to agricultural producers of the transfers from consumers or the government due to the support at the existing level of production. PSEs are calculated at the farmgate level. The prices received by farmers are the prices paid by consumers at the first level of consumption. Under these conditions, the consumption price at the farm gate is the producer price, except when the level of consumption is higher than the level of production and the level of market support of the quantities imported is different from that of domestic production.

The PSE is an indicator of the value of the transfers from domestic consumers and taxpayers to producers resulting from a given set of agricultural policies at a point in time. Thus, PSEs are aggregate measures of the total monetary value of the assistance to output and inputs on a commodity-by-commodity basis, associated with government policies.

Five categories of agricultural policy measures are included in the OECD calculations of PSEs:

- i) Measures that simultaneously affect producer and consumer prices (market price support);
- ii) Measures that transfer money directly to producers without raising prices to consumers (direct payment);
- iii) Measures that lower input costs (reduction in input costs);
- iv) Measures that in the long term reduce costs but that are not directly received by producers (general services).

PSEs can be expressed in three ways: i) as the total value of transfers for the

commodity produced; ii) the total value of transfers per unit of the commodity produced; and iii) as the total value of transfers as a percentage of the total value of production including transfers.

In algebraic form, where the level of production is Q_p , the domestic market price is P_d , the world price is P_w , direct payments are D , levies on producers are L and all other budgetary financed support is B , the PSE expressions as measured by OECD are (Cahil C., Legg W. p. 16):

$$\text{Total PSE} = Q_p(P_d - P_w) + D - L + B$$

$$\text{Unit PSE} = \text{Total PSE}/Q_p$$

$$\text{Percentage PSE} = 100 (\text{Total PSE}) / [Q_p P_d + D - L] \text{ (at domestic prices).}$$

4.3 Discussion of the assumptions in PSE calculations

There are some important underlying assumptions used in the calculation of PSEs:

- i) Markets of agricultural commodities have downward-sloping demand and upward-sloping supply curves that determine equilibrium prices and producer and consumer surpluses, meaning the "law of one price" applies;
- ii) An open small-country economy is assumed, in which prices in the world market are assumed to express the opportunity costs to domestic producers and consumers;
- iii) Commodities are assumed to be homogeneous for producers and consumers. This applies both to the commodities defined for reference (world) price purposes and domestic commodities.

This list shows that if the main purpose of the calculation of PSEs is taken into consideration, the methods used by Liefert et al. are not consistent with the purpose, because some of the assumptions are seriously violated. It will be also shown that more accuracy is required when one operates with statistical data on Russian agricultural production and sales. With improved data, it is possible to generate significantly different results, even in the framework of standard PSE methodology.

It is useful to mention that originally the PSE method was applied to countries with developed market economies. All of them are well-integrated into the world agricultural and nonagricultural markets. For this reason, the applicability of this method to countries with economies in transition to a market economy and a low level of integration in international markets can be limited. For each country, different limitations may apply. Furthermore, some restrictions that make the use of the PSE method for Russian agriculture questionable should be considered.

4.3.1 The first assumption

The "law of one price" is not applicable in most transition economies, though the degree of market integration varies considerably. It is particularly not acceptable for Russian agriculture for several reasons.

First, the degree of market integration varies greatly among Russian agricultural producers. At present, there are three forms of agricultural enterprises in Russia. One group consists of 25,000 large agricultural enterprises. In 1994, they produced about 60

percent of agricultural output. Approximately 38 percent of output was produced by private subsidiary farms consisting of 16.5 million households. About 2 percent of output was produced by emerged new private farms (peasant farms). During the transition period one can observe the significant changes in the structure of agricultural production (see Chapter 2). Each of these groups has its own specific production and market characteristics, and faces very different input and product market conditions. Liefert et al. analyze the entire agricultural sector without distinguishing the difference among various groups of producers.

Because these groups of producers have different structures and sales channels, they face different prices. For example, most meat produced by large agricultural enterprises is sold to local meat processors. Owners of PSFs prefer to sell their products on local public retail markets (bazaars). As a result, in one case the agricultural producers receive the procurement price less the processing margin and in the other case they receive the retail price and internalize the processing and market costs. By virtue of the fact that both channels of sales have significant shares of the meat market, we cannot consider only one price as a reference price for the domestic meat market. Liefert et al. apply only the wholesale price for all agricultural commodities. This approach could substantially understate the revenue for agricultural producers depending on the type of commodity. The structure of sales for each agricultural commodity varies. For example, bulk grain is sold on the wholesale market to processors or other enterprises. At the same time, most potatoes are marketed to consumers through local retail markets.

Taking these factors into consideration, a researcher needs to distinguish groups of producers and different commodity markets in order to obtain the correct information about prices and revenues in agriculture to be used in PSE calculations.

4.3.2 The second assumption

Russian agriculture does not operate in the framework of an open country economy for all agricultural commodities. There are only few commodities for which one can apply this approach: eg., sugar, butter, poultry and vegetable oil. Russian agricultural producers work under the condition of closed isolated markets for most other commodities. As a result, only domestically originated demand and supply clear the market. The prices on the world agricultural markets do not significantly affect domestic prices. Thus, they do not represent the opportunity cost for Russian agricultural producers.

This situation exists for several reasons. The first reason is a difference in the quality of commodities. Most agricultural producers and food processors do not provide the quality of products required for international markets. The second reason is the lack of knowledge of international markets. And the third reason is an insufficient market infrastructure to transfer signals from world markets to domestic producers. Also, the experience of many Russian businessmen shows that federal or local regulations not be considered as significant obstacles to the export of food products from Russia. However, the necessity to meet the quality requirements in other countries is a real challenge. As a

result, the export of agricultural and food products occupies an insignificant share in the market and cannot be considered at present as a source of revenue for domestic agriculture.

The majority of agricultural outputs can only be sold on domestic markets and in most cases only on local or regional markets. Therefore, one should be careful in determining a reference price that may represent the opportunity cost for domestic producers. In very rare cases, it will be world prices (for example, in recent years a small amount of barley, wheat and flour was traded with other countries). However, the small volume of this trade indicates that these markets are not available to most producers. Therefore, these prices cannot be considered as the opportunity costs for the entire agricultural sector. In some cases (for example, grains), average national prices can represent the opportunity costs for many agricultural producers. However, for some other agricultural products only local or regional prices are realistic market information for agricultural producers. Only the level of these prices determines producer's revenue for a particular commodity. The bulk of agricultural products (especially the high-value ones) falls into that category, including meat, milk, eggs, and potatoes.

The use of import prices as reference prices is also inappropriate for other reasons. These are connected with the violation of the assumption of homogeneity of commodities, and is discussed in detail below.

4.3.3 The third assumption

The violation of the third assumption can be considered in the framework of arguments that were applied to explain the violation of the second assumption. Liefert et al. use some world prices as the reference prices for domestic production. However, they do not explain how they justify the compatibility of these prices with prices for domestically produced agricultural commodities.

In some cases Liefert et al. use the price for one kind of commodity as a reference price for another. For example, for wheat they used the price that represents food wheat with high quality characteristics (protein, milling quality, etc.). At the same time, the chosen domestic price is the average wheat price including food and feed categories. In the case of poultry, the reference price relates mostly to the import of chicken legs. However, the domestic price relates to the whole chicken carcass. Therefore, the assumption of homogeneity of commodities is violated.

Further, there are some concerns about the use of so-called "world prices" for agricultural commodities such as sugarbeets, milk and eggs. These commodities are raw agricultural products that are generally not traded internationally. If the authors use prices from other countries, it means that they violate the second assumption because these markets are not available for Russian agricultural producers.

4.3.4 The exchange rate

The previous arguments have cast some doubt on the acceptability of the PSE methodology to estimate the overall transfer to or from agricultural producers. However, it is also necessary to mention the problems connected with the choice of the exchange rate in these calculations.

The exchange rate is the price of one currency in terms of another one. In our case, this price reflects the equilibrium on the money market that is comprised of dollar demand and supply and ruble demand and supply. This market has limited influence on overall agricultural production and agricultural trade. Most of the agricultural output is sold on domestic markets for rubles, and most inputs are bought in the domestic markets for rubles from domestic producers who also do not rely on international supply. For this reason, the use of the commercial ruble/dollar exchange rate for estimation of transfer to Russian agricultural producers is senseless from the point of view of domestic producers. The authors themselves demonstrate that the use of another exchange rate (purchasing power parity) would generate the opposite result: the PSEs would become positive. In this case, the reasons for the conclusion that Russian agriculture is heavily taxed disappear immediately. However, the authors for some reason ignored this result, which (as will be demonstrated further) is much closer to the real situation in Russian agriculture. Moreover, they try to present some outside information that, from their point of view, could support the general conclusion obtained with the PSE methodology.

The use of PPP (purchasing power parity) is not considered a correct approach to

calculating PSEs. One cannot use the PPP exchange rate because the purpose of PSE calculations is to estimate transfers to or from agricultural producers in real economic terms. However, PPP does not exist in the real economy and nobody uses it for financial transactions. For this reason, the estimations of PSE obtained in the terms of the PPP exchange rate did not serve the initial goal of their study.

4.3.5 Reference prices

The correct definition of external reference prices has always been the most controversial issue in PSE calculations. Experience has shown that reference prices are the most important parameter in determining the magnitude and the trends in PSE. Liefert et al. use a practical rule, established by OECD, that an f.o.b. (free-on-board) border price is chosen if a country is a net exporter while c.i.f. (cost, insurance, freight) price is chosen for a net importer (Cahil C., Legg W., p.24). Moreover, the authors apply this rule for all commodities assuming that "the appropriate border prices to us in computing PSEs are import c.i.f. prices (mainly to Baltic ports)."

Two arguments can be made against this approach. First, to use a uniform approach to calculate PSEs for all chosen commodities may be not correct. In recent OECD studies on agricultural policies in transition economies, different prices are used as proxies for reference prices. For example, in order to calculate PSEs for the Czech Republic the following reference prices are used (Review of Agricultural Policies. Czech Republic, p.281):

- European Union (EU) export price for wheat (f.o.b. Rouen), barley (f.o.b. French

- ports), refined sugar (f.o.b. EU);
- Austrian unit export value for rye;
 - Czech unit export value for potatoes;
 - EU import price for rapeseed;
 - New Zealand farmgate price for milk;
 - EU live animal price for beef, veal and pigmeat;
 - Extra-EU unit export value for poultry and eggs.

Second, the estimation of some border prices used in the PSE calculations cause concerns. For example, the authors use a reference price for wheat that ranges from 209 USD to 214 USD per ton for various years. However, this price greatly overstates the actual price of wheat imports to Russia. In 1992 and 1993, the average price of imported wheat was about 146 USD to 147 USD. Sometimes the price has been even lower because either Russia imported subsidized grain from developed countries or the grain was imported from other countries of the former USSR. For example, in the first quarter of 1995 the average price of imported wheat was 85 USD per ton, in the second quarter - 109 USD (Sizov A.). The quality characteristics of a commodity should also be taken into consideration. The wheat traded on the Chicago Board of Trade has in most cases different quality characteristics than the bulk of wheat traded domestically in Russia. For this reason, the so-called "the world price" cannot always serve as the best source of reference price for PSE calculations.

4.4 Discussion of the domestic economic environment and regulation

Liefert et al. suggest that there are two main reasons for "large negative PSE calculations": state controls on prices and trade and a deficient agricultural infrastructure. From their point of view, these factors cause the low farmgate prices. The discussion in the previous section shows that we cannot consider world prices as the opportunity costs for domestic agricultural producers in Russia. Now, let us examine how the economic environment and regulations influence domestic agricultural prices.

The authors noted that there is no restriction on internal trade from the federal government. One can also analyze the federal regulations for recent years and conclude that the federal government did not have, does not have, and will not have an intention to restrict the domestic agricultural trade. However, some interventions exist for foreign trade. The federal government imposes significant tariffs on imported food (from 15 to 35 percent) that favor domestic agricultural producers. Furthermore, the federal government has several programs to support revenue for agricultural producers that increase incentive prices. For this reason, federal agricultural policy cannot be considered as the main cause of depressing farmgate prices.

Liefert et al. also speculate that state control, in the forms of quotas, licenses, taxes, and bans on export, has been stronger at the regional level than at the federal level. However, this conclusion can be argued. Based on economic theory one can conclude that the restrictions on exports in producing regions cause oversupply in these regions and shortages

in net-importing areas. The oversupply causes prices to fall in producing regions, and, at the same time, the shortage causes an increase in prices in deficit regions. Sooner or later the agricultural products will be moved from exporting regions to importing regions. Thus, both effects of the regional export restriction need to be recognized, as well as the possibility of arbitrage to exploit the price difference that results from these restrictions.

Another argument that supports the existence of state control on the local level is controlling retail prices for food commodities. A reference from a Russian source quoted by Liefert et al. states that the percentages of cities controlling retail prices at a low level in a March 1994 sample are 66 percent for bread, 35 percent for sugar, 33 for meat, and 44 percent for milk. The authors assume that these restrictions cause lower purchasing prices for agricultural producers.

However, the percentage of cities that control retail prices, along with restrictions on trade, did not give these researchers correct information about the significance of control on the deviation of prices from equilibrium. The authors assume that the implementation of these regulations at the local level can be a significant factor that explains the large difference (from 2 to 10 times) between world prices and domestic prices of agricultural products. In order to obtain this kind of information, detailed studies should be conducted.

Unfortunately, no such studies exist. However, one can use a study on retail food prices in Russia, conducted by Gardener and Brooks. This study shows that regulation at the local level explains only a small part of price differences among cities in Russia. Therefore, this factor cannot be used to explain the significant deviation of domestic prices from world

prices.

4.5 Estimation of the level of support to agriculture

Taking into consideration the above-mentioned arguments, another calculation of PSEs for Russian agriculture has been conducted. The results of these calculations and a discussion of the approach are presented in this section. The final results of these calculations appear in Table 4.2. The tables upon which calculations of this set of PSEs are based are provided in Appendix B.

In order to provide results that are consistent with the approach in the previous work in this study the modified formulas¹ are used to calculate PSEs:

$$\text{Unit PSE} = P_d + T/Q - P_w * E$$

$$\text{Percentage PSE} = \text{Unit PSE} / (P_d + T/Q)$$

where P_d = weighted market price for all agricultural producers, T = all subsidies and transfers to agriculture, Q = production marketed by all agricultural producers, P_w = reference price in dollars, E = exchange rate rubles per USD.

In this case a PSE is defined as the difference between a commodity "incentive price" (market price plus per unit subsidies and transfers) and its reference price (border price from the international market). Percentage PSE is measured to incentive price in accordance with the OECD approach.

¹ These formulas can be easily derived from the formulas on p. 61. However, they do not include levies on producers, which can be ignored because they are inconsequential in Russia

Table 4. 2 Alternative estimates of PSEs for Russian agriculture, 1992 through 1994, (percentage per unit value)

	1992	1993	1994
Beef and veal	-148	-16	14
Pigmeat	-33	22	42
Poultry	-32	21	38
Milk	-4	3	45
Eggs	-211	30	48
Wheat	-106	-98	-132
Corn	-40	-48	-10
Barley	-274	-88	-90
Sugar beets	16	25	16
Sunflower seeds	-56	0	5
Potatoes	-103	-68	64

Source: calculations by the author (see Appendix B)

Several modifications have been made to compared to the previous work. First, the production marketed has been separated among different groups of agricultural producers. Second, the appropriate prices have been applied for each part of the production marketed. Wholesale prices have been used for the output marketed by large agricultural producers. Retail prices from city markets have been chosen as a proxy for the products marketed by private subsidiary farms. Third, different approaches have been applied to choose reference prices depending upon the commodity and the situation on the market.

These calculations generate completely different results compared with the previous

study by Liefert et al. Two periods can be distinguished: a period with negative PSEs and a period with positive PSEs. The negative PSE estimates mean that agricultural producers supply cheaper agricultural products than could be imported from the international market. This situation is beneficial for domestic consumers. One cannot interpret the situation as a transfer from agricultural producers to consumers or taxation of agriculture. Both sides of the food market prefer to operate under these conditions because open markets with the current exchange rates would mean extremely high prices and a decrease in consumption by consumers and a loss of significant markets for agricultural producers.

Agricultural producers do not compete on the international market due to the difference in quality between domestically produced and internationally traded products. In addition, no developed channels for international trade exist. The small volume of agricultural exports indicates that only an insignificant number of agricultural producers can receive benefit from international trade by taking advantage of substantially lower production costs.

It is necessary to take into consideration the fact that the commercial exchange rate for 1992 cannot be used in the conventional way as in other countries. The exchange market was very "thin," with a small volume of exchanged currency that was unstable due to the high level of inflation and changes in governmental regulations. During this period, the level and dynamic of the exchange rate did not reflect fully the domestic economic conditions. Like any market, the currency market needed some time to adapt to the new economic environment. Before that period, the exchange rate was established only by

government. Later, a greater volume of currency became involved in exchanges, and imported food products became an important part of overall imports. During the period 1993-94, the exchange rate began to play a more significant role for food consumption and agricultural producers. One can see that market price support became positive in the 1993-94 period for most of the analyzed products (Table 4.2).

It is assumed that the positive value of market price support for agricultural producers has three sources: budget transfers, consumer transfers and compensation for entrepreneurship. The first two transfers are a common part of PSEs, however the transfers connected with entrepreneurship have not been discussed in the previous work. Therefore, the following discussion will be focused mainly on this issue.

The compensation for entrepreneurship is not an independent or additional source of money flow for the agricultural producer. Part of consumer transfers goes directly to agricultural producers because they sell a part of their output on retail markets. Of course, agricultural producers bear some expenditures connected with processing and transporting commodities to the consumers. In the case of meat products, they need to slaughter livestock and cut carcasses. Some milk is also sold in the form of processed products (sour cream, butter, cheese). Experience shows that these expenditures are significantly lower than the gap between farmgate and retail prices.

In previous analyses, it is pointed out that retail prices are were applied only for sales by private subsidiary farms. However, it is a well-known fact that large agricultural producers also use this channel to receive "hard cash." Usually they do not report correctly

about the volume of these sales. In other words, positive PSE in the case of the Russian agricultural sector can be partially interpreted as a support of entrepreneurship conducted by agricultural producers.

4.6 Analysis of PSEs by commodity

4.6.1 Meats

The market price for beef for large agricultural producers can be found in the annual official statistical handbook. One can also find the annual average price through other channels. It is important to note that these sources indicate that almost 80 percent of beef sales go through the wholesale market (local meat processors and consumer cooperatives). Thus, procurement prices serve as good indicators of market revenue for large agricultural producers.

The determination of the market price for private subsidiary farms is a complex task. There is no official statistical information about these sales. For this reason, city market prices are used as a proxy of the market price for these agricultural producers, because most products from PSFs go to consumers through local retail markets. The officially reported volume of agricultural products sold by private subsidiary farms is underestimated (perhaps significantly). For obvious reasons, private farmers do not prefer to report a true volume of sales. Therefore, the overall revenue for the agricultural sector from private subsidiary farms is consistently understated. However, our calculations show that even using the official information on these agricultural producers significantly changes the financial performance of

the agricultural sector.

Because Russia imports a significant quantity of beef (1992 - 288,000 tons, 1994-358,000 tons), one can use the average price of imported red meat as a reference price for beef. The justification for this approach is that the import of beef is the real opportunity cost for Russian meat processors and meat traders.

The supported domestic price is the sum of the weighted market price plus per unit policy transfer (all weighted subsidies). This approach has been applied because rural families, who own most of the private subsidiary farms, work simultaneously on large agricultural enterprises. The subsidies are partly absorbed by these rural families in the form of salaries and resources on preferential prices (feed, machinery rent, fuel, etc.).

For poultry, as for other meats, the annual average prices of imports are used as reference prices. Objections may be made that the poultry import consists of chicken legs, while the weighted market price reflects the whole carcass price. However, imported poultry can be considered as a perfect substitute for other poultry meat. Moreover, Russian consumers prefer legs to other chicken parts. As a result, in a situation of equal prices, consumers will choose legs rather a whole chicken. In addition, the general quality of domestically produced poultry is lower than that of the imported poultry.

The PSEs for beef were the lowest among livestock products (Appendix B, Table B.1). While the cattle sector has the same level of subsidies in revenue as the hog sector, the share of production sold on retail markets is lower. The relatively high PSE estimates for pigmeat can be explained by both the significant share of the production marketed by private

subsidiary farms and by the level of subsidies (Appendix B, Table B.2). The same reasons hold true for the poultry sector. However, in 1994 the level of retail prices was probably affected by an import tariff. Thus, some transfers to poultry producers can be connected with this factor (Appendix B, Table B.3). It is expected that PSE for 1995 will be significantly higher for this sector because import tariffs have been increased.

4.6.2 Milk

For milk the standard OECD procedure is used to calculate PSE (Appendix B, Table B.5). The New Zealand farmgate price for milk serves as a reference price. This is a reasonable reference price for Russia, since much of imported butter is from New Zealand. The estimate of transportation cost is taken from "Review of Agricultural Policy: Estonia. Working Party Paper. Annex 1."

Percentage PSE for milk was negative in 1992, and reached the lowest level in absolute value among livestock products. In 1994, PSE for milk reached the highest positive value for two reasons. First, milk production in large agricultural enterprises was heavily subsidized by local governments because it was the main resource of milk for the urban population. The share of subsidies in revenue from marketed milk was the highest among livestock products: 36 percent in 1992, 25 percent in 1993, and 28 percent in 1994. Second, both private subsidiary farms and large agricultural enterprises sold a significant amount of milk on retail markets. Thus the high level of positive PSE can be attributed in part to entrepreneurship.

4.6.3 Grains

Average prices of imported wheat, barley, and corn are used as a proxy for a reference price for grains. These prices include transportation cost to Russian continental ports and can be considered as an opportunity cost for domestic grain trade companies and mills. There is no significant difference in transportation costs within the country between imported grain and domestically produced grain. On average, the transportation and handling cost of grain from sea ports to consuming areas is almost the same as the transportation and handling cost from domestic agricultural regions to the consuming areas.

The difference in the quality of imported grains and domestically traded grain should be taken into account. This problem is a reality for wheat especially. Russia used to import high quality food wheat (hard and durum varieties with higher protein content and other superior quality characteristics). Reported marketed wheat production in Russia includes both food and feed varieties. Therefore, the average quality of domestically marketed wheat is lower than imported wheat. Also, Russia exports mainly feed grains (wheat and barley).

The negative PSEs for wheat reflect a specific situation in the food market (Appendix B, Table B.6). Grain products are the main components of human consumption in Russia, and now they are even more important than before. The consumption of grain products has increased significantly. This conclusion cannot be extracted from official data on consumption. These data show that there is a slight increase in the consumption of grain products. However, before price liberalization a substantial portion of grain products went to feed livestock on private subsidiary farms because of a very low price and ample

availability of bread products compared with the high price and poor delivery system for concentrated feed.

After price liberalization, market prices corrected this situation. Since that time, human consumption has not included feed for livestock. Therefore in reality, much more grain products are consumed directly and they play a significant role in daily diets. For this reason, federal and local governments consider a stable supply of grain products as a primary goal for food market policy. Generally, with the exemption of a few regions, they allow markets to clear prices. However, they use imports (from abroad and from other regions) to provide enough supply to keep grain product consumption at a stable level. This additional supply keeps retail prices at a stable level, lower than they would be otherwise.

Can this situation be viewed as a some kind of taxation for agricultural producers and would agricultural producers obtain "fair" prices in the absence of this policy? In general, the answer to this question is no. In the short-run and even in the long-run, agricultural producers are not able to provide an adequate quantity of grain to match the goals of state social policy. Also, the average quality of domestically produced food wheat is lower than that available on international markets. In situations of unrestricted competition, domestic mills prefer to import wheat. In the extreme case, imported wheat can substitute for a substantial part of domestically produced wheat. As a result, agricultural producers will lose a huge share of the market and their total revenue could be even lower compared with current conditions. Another result will be increases in retail prices and decreased consumption, which could provoke serious social conflicts. The

government would be forced to subsidize imports to support socially acceptable prices. Due to the decrease of the domestic producers' surplus and the increase of government spending, the overall losses for society could be much higher compared with the current situation.

The negative PSEs for corn (Appendix B, Table B.7) and barley (Appendix B, Table B.8) are caused by the fact that they are used mainly to feed livestock. This sector has negative PSE estimates and the demand for feed crops is the derived demand from the livestock sector.

4.6.4 Sugar beets/sugar

The price of imported raw sugar is used as a reference price for sugar beets. This price reflects the opportunity cost for Russian sugar refiners. They always have a choice to produce white sugar from sugar beets or from imported raw sugar.

This calculation also takes into account that since 1992, agricultural producers have preferred to order refiners to process sugar beets. After that agricultural enterprises sell or barter refined sugar on their own. Positive PSEs for sugar beets are explained partly by subsidies and partly by the benefit of entrepreneurship (Appendix B, Table B.10). Also, the level of domestic prices has been increasing due to the introduction of import tariffs. Therefore a certain part of positive PSE is connected with this factor. This factor will be particularly significant in 1995 when import tariffs were raised again.

4.6.5 Sunflower seeds/oil

For sunflower seeds, it is reasonable to use the approach applied for sugar beets, in which the price for a processed product serves as a reference price. In this case, one needs to use sunflower oil. Because Russia is a net importer of vegetable oil, the price of imported sunflower oil could be used as a proxy of the reference price for sunflower seeds. However, these prices are too high because imported oil is of higher quality and has a higher level of preparation for retail trade. For this reason, the annual average price of exported sunflower oil is used for the calculation of market support. These prices better reflect the average quality of domestically traded oil.

In this sector agricultural producers also prefer to have processors only to extract oil and return oil and other byproducts (meal, etc.) to the producers of seeds. After processing the oil has been sold on retail and wholesale markets. In 1993 and 1994, PSE estimates for this crop have been around zero (Appendix B, Table B.12). This figure indicates that the benefits of entrepreneurship were the main factors that allowed agricultural producers to obtain revenues that are comparable to revenues from marketing at world prices. It is expected that high import tariffs on vegetable oil will raise PSE estimations in 1995.

4.6.6 Potatoes

The previous work by Liefert et al. does not considered potato production. However, this crop is an important source of income for small agricultural farms. In a recent study, PSEs for potatoes are calculated (Appendix B, Table B.13). Again, prices for marketed

production have been distinguished between LAEs and PSFs. The average price of the potato export from the Czech Republic are used as a reference price. Of course, the best choice would be to choose the Poland export price for potatoes because Russia sometimes imports significant quantities of potatoes from this country. However, these prices were not available. Furthermore, many Polish potatoes were bartered. Therefore, Czech prices are considered as a proxy for Poland prices.

Starting with negative numbers in 1992 and 1993, the PSE for potatoes became positive in 1994 (64 percent). However, this sector of agricultural production did not receive notable government support: there are no direct subsidies and import tariffs do not play a significant role for pricing on retail markets (see Appendix A, Table A.5, p.102) . One source of the positive PSE is a compensation for entrepreneurship because PSFs sell their potatoes on retail markets. Another source is the depreciation of the exchange rate, which makes the national currency more valuable with respect to the U.S. dollar.

* * *

In conclusion, a few main points should be emphasized. This study criticizes the PSE method and PSE interpretation as it has been traditionally applied and concludes that this method has severe limitations when applied to transition economies. Many of the conditions taken for granted in mature market economies cannot be assumed for transition economies, so the validity of PSE measures is questionable. Certainly, these measures must be interpreted more carefully than would normally apply in OECD countries.

When PSEs are calculated with differentiated prices for two groups of agricultural

producers, the meat, milk, eggs, sugar beet and sunflower seed results move further away from the large negative figures presented by Liefert et al. and a few more positive PSEs appear. Grain results do not change, since large and small farms both sell to major processors and do not usually market grain on retail markets. The increased average prices reflected in these results is to a large extent due to entrepreneurship, since higher prices are obtained by the group of farms that engage in direct marketing. These results are likely to overstate the prices these farmers receive, because the cost of postharvest activities is not included.

Despite these problems, PSEs have been calculated for the Russian agricultural sector, being especially careful in the selection of appropriate farm prices and reference prices. Given these assumptions and data, significantly different results have been obtained. These results are closer than those of other studies in reflecting a realistic view of the relationship among the prices, government support, and agricultural sector performance. However, these PSEs cannot be considered very reliable in comparing levels of support with OECD countries or even other economies in various stages of transition. When a comparison of domestic and border prices is used as the main indicator of support or losses, the results will always be less reliable where markets are immature and poorly integrated with external markets.

CHAPTER 5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The ongoing economic reforms in Russia have brought about significant changes in its economic system and the structure of the agricultural sector. Although the path and pace of the reforms is contradictory in character, the general trend of the reforms is to move from a centrally planned system to a market economic system. The role of market forces in determining resource allocation and shaping the agricultural sector has increased significantly in the national economy and the agricultural sector.

At the same time, Russian agriculture has experienced substantial problems during its transition. Changes in the economic environment and infrastructure, inflation that caused the effect of price/cost squeeze, a lack of access to credit resources, and a drop in purchasing power of consumers of farm products have all heavily affected the sector's performance. These circumstances caused a drop in agricultural production, a steep reduction in investment, the collapse of construction and maintenance of farm equipment, and the moral and physical obsolescence of the production and social infrastructure. On the one hand, economic reforms stimulate the growth of efficiency and private incentive in the agricultural sector. On the other hand, the sector requires intensive government intervention to provide a smooth transition without dramatic social and economic losses for the rural economy. The federal governmental programs for agriculture are targeted mainly at fixing market failure that is caused by the varying ability of different sectors of the economy to adapt to new economic conditions.

The development and results of economic and agrarian reforms in Russia are of significance for the field of economics. It is important to test how economic theory and methods developed in the framework of market economies are applicable to transition economies and to estimate the impacts of the reforms on economic growth and performance of the agricultural sector. Careful analysis of economic processes in transition economies can provide insights into the limitations of modern economics.

Russia has become deeply involved in the international trade of agricultural commodities. Therefore, the changes in Russian domestic markets and government policy toward agriculture may have a substantial impact on international markets and on the development of agricultural sectors in other countries.

This study had three major objectives: (1) to describe the general development of the national economy and the agricultural sector in Russia in the early 1990s; (2) to provide an analysis of agricultural programs using microeconomic methods and instruments; and (3) to estimate the overall effect of agricultural policy on the sector using producer subsidy equivalents.

This thesis has been organized into 5 chapters. Chapter 1 discusses the background, the problem setting and the objectives of the study. Chapter 2 presents a quantitative assessment of the changes in the agricultural sector's performance in Russia, the farm structure, food consumption, and agricultural trade. Chapter 3 describes the structure of the agricultural policy of the Russian federal government. The majority of this chapter is devoted to the analysis of the most important agricultural programs: price supports, minimum

guaranteed prices, input subsidies, leasing programs, agricultural credit, and import tariffs. Chapter 3 uses typical instruments of microeconomic theory to demonstrate and explain the results of government interventions in the agricultural sector. This analysis provides useful information for Russia's policy makers in assessing the relationship between the goals and results of agricultural policy. Chapter 4 presents the results of estimating producer subsidy equivalents (PSEs) for Russian agriculture. The study uses modified approaches to calculate PSEs compared with the previous work and takes into consideration the existence of three major groups of agricultural producers that have different market channels and face different prices on the market.

The PSEs were estimated for the period 1992, 1993 and 1994 for the following major commodities: beef, pigmeat, poultry, milk, eggs, wheat, corn, barley, sugar beets, sunflower seeds, and potatoes. The results do not support the hypothesis that the agricultural sector in Russia is heavily taxed. Also, the calculations show that positive PSEs can be explained by the benefits of entrepreneurship rather than government intervention.

Several major conclusions can be made based upon the study.

First, economic reforms have radically changed the structure of agricultural production and the economic environment for the agricultural sector. The sector not only reduced production but also lost a significant part of the food market that is now occupied by imported food products. The price/costs squeeze effect has caused a significant decrease in farm incomes and a degradation of the production infrastructure. The changes in relative prices have caused the current structure of agricultural capital to become inefficient for

conducting business in the new economic environment. The restructuring of the agricultural sector has developed more slowly than in other sectors of the economy. Therefore, the transition period will be long and the sector requires governmental support (albeit of a different type than in the past) to ease this transformation.

Second, the major motivation of agricultural policy is to fix market failures that are caused by varying speeds of restructuring in other sectors of the economy. The purpose of the introduction of some agricultural programs is to prevent significant economic and social losses that can be caused by imbalances in the national economy.

Third, governmental intervention has different structures on the federal and local levels. The federal government has supported mainly seed and pedigree livestock production, has compensated for costs associated with fertilizer, chemicals and fuel, has written off debts, has developed leasing of machinery, and has developed a credit system. The regional governments subsidize primarily livestock production. However, a common feature of federal and local agricultural policy is that they both support the rural economy only through large agricultural enterprises, while small farm units that produce 40 percent of agricultural output are ignored.

Fourth, some agricultural programs have not accomplished their stated goals and often produced an adverse effect. Preferential credits have been used mainly for nonagricultural purposes. Write-offs have increased the state debt and could have an adverse effect on the national economy and agriculture as well. Livestock subsidies have tended to decrease the procurement price for agricultural producers and the overall effect is ambiguous.

Input subsidies and leasing programs have provoked price increases for machinery and equipment.

Fifth, the foreign trade policy favors domestic producers and the federal budget. At the same time, consumers have to pay higher prices for imported food products because of a low supply of domestically produced products. Also, import tariffs on food products do not protect agricultural producers because most gains go to the processors.

Sixth, in order to obtain correct PSE estimations for Russian agriculture the different groups of producers and marketing channels should be distinguished along with an adequate assessment of prices that these groups face on the market.

Seventh, the negative PSE estimates obtained using the standard methodology cannot be interpreted as some kind of taxation for agricultural producers because Russian agricultural markets are not fully integrated in international trade and low domestic prices reflect the appropriate result of market clearance between domestic supply and domestic demand. The positive PSE estimates are caused not by significant government support but rather by benefits from entrepreneurship when agricultural producers go directly to retail markets or sell processed products.

Using the results of this study selected recommendations can be made for developing agricultural policy in Russia.

The government should eliminate input subsidies to agricultural producers because input supply is inelastic: the more the government intervenes, the faster the disparity rises and the wider the price scissors becomes. For example, Poland and the Czech Republic

experienced the same problem: sharp price disparity followed the introduction of input subsidies. When subsidies were removed, the disparity evened out. Government support should stimulate the market relationship between producers and input suppliers. Many of the existing problems could be resolved simply by credit and leasing carried out not by the governments but directly by private firms.

Agricultural policy needs to be developed that takes into account the fact that agricultural production is shifting from large farms and complexes to small producing units based on single families or groups of families.

The introduction of import tariffs will not stimulate domestic producers to improve the quality of food products and to be more competitive with foreign producers. Therefore, import tariffs can be replaced by import quotas that can be allocated through auctions.

Russia occupies a huge territory and regional markets have different levels of development, functioning sometimes as closed markets due to a poorly developed market infrastructure. Thus, PSE estimates obtained for the Russian agricultural sector as a whole do not reflect the specific situations in different regions. In order to obtain estimates of the overall effects of government regulation on agricultural sectors in various regions, the PSE approach should be significantly modified.

The credit systems for agriculture must be changed significantly, targeting three goals: to make long-term credit available for efficient farms, to stimulate the restructuring of large agricultural enterprises, and to prevent the use of loans for nonagricultural purposes. In order to accomplish these goals new regulations must be implemented to obtain loans for

agricultural purposes with a description of conditions and strict procedures to control how these financial resources are used. The Ministry of Finance, and the Central Bank should work with the Ministry of Agriculture to develop and implement these regulations. It assumes that certain economic and legal conditions will be established for the development of asset markets.

Write-offs of agricultural debts should be permanently excluded forever from agricultural policy because they make the entire system of agricultural credits inefficient and distort the incentive systems for agriculture.

The federal government should establish reasonable and clear targets for its support to the agricultural sector for an extended period, at least the period between presidential elections. These targets can include, for example, restructuring support (including bankruptcy procedures), social services support, income support and preferential credits. In this case the agricultural sector should be considered as a structure that includes both large and small producing units. All sources of income should be taken into account. Long-term loans with low interest rates should be available for all types of agricultural producers that will satisfy predetermined conditions. This system will stimulate the development of the most efficient production units and provide opportunities for the smooth restructuring of the entire agricultural sector.

APPENDIX A. TABLES WITH AGRICULTURAL DATA

Table A.1 Number of livestock (million)

	1990	1991	1992	1993	1994	1994/ 1990, %
Number of cattle, total	58.8	57	54.7	52.2	49	83%
- large agricultural enterprises	49.3	47.2	43.9	40.2	36	74%
- private subsidiary farms	9.5	9.9	10.8	11.6	12	126%
- peasant farms	...	...	...	0.4	1	
Number of hogs, total	40	38.3	35.4	31.5	29	72%
- large agricultural enterprises	33.8	31.2	27.6	23.5	20	60%
- private subsidiary farms	6.2	7.1	7.8	7.8	8	127%
- peasant farms	...	...	...	0.2	0	
Number of sheep, total	61.3	58.2	55.3	51.4	44	71%
- large agricultural enterprises	45.4	41.6	37.6	32.3	26	56%
- private subsidiary farms	13	13.6	14.6	15.2	14	109%
- peasant farms				0.7	1	

Sources:

Production and economic data on the agro-industrial complex of Russia in 1994, pp. 34

Russian Statistical Yearbook, 1994. pp. 343, 346

Livestock in the Russian Federation, 1992, p. 6-7

The Russian Federation in 1992. pp. 471

Table A.2 Planted area by crop (million ha)

	1990	1991	1992	1993	1994
Total planted area	118	116	115	111	105
All grains	63	62	62	61	56
Winter wheat	9.7	9.2	10.8	10.5	7.8
Spring wheat	14.5	14.0	13.5	14.2	14.4
Barley	13.7	15.2	14.5	15.4	16.4
Rye	8.0	6.5	7.6	6.0	3.9
Sunflower seeds	2.7	2.6	2.9	2.9	3.1
Sugar beets	1.5	1.4	1.4	1.3	1.1
Potatoes	3.1	3.2	3.4	3.5	3.3
Vegetables	0.61	0.66	0.68	0.68	0.74
Feed crops	44.6	44.0	42.5	41.0	39.6
Fallow	13.8	14.7	13.0	13.5	16.9

Source:

Russian Statistical Yearbook, 1995. p. 361

Table A.3 Crop yields (centner/ha) and livestock productivity*

	1986-1990**	1991	1992	1993	1994	1991-1994*
All grains	15.9	14.4	17.2	16.3	14.4	15.6
Winter wheat	28.2	28.1	26.2	25.9	22.1	25.6
Spring wheat	11.9	9.4	13.3	11.5	10.4	11.2
Sunflower seed	12.7	11.2	10.8	9.4	8.1	9.9
Sugar beet	225	174	178	191	126	167.3
Potatoes	108	108	113	106	101	107.0
Vegetable	154	146	137	135	129	136.8
Beef ***	121	112	102	100	89	100.8
Pork***	118	111	102	103	95	102.8
Milk yield, kg per cow	2731	2567	2332	2328	2162	2347.3
Eggs, per hen	236	231	224	222	214	222.8
Wool, kg per head	3.9	3.7	3.4	3.3	3.0	3.4

* - 1 centner = 0.1 metric ton

** - annual average

*** - kg of liveweight per head unit

Source: Russian Statistical Yearbook, 1995. pp.363, 372

Table A.4 Structure of selected retail prices in 1994, %.

	Retail price	Agriculture	Industry	Trade
Milk	100	30.9	52.9	16.2
Butter	100	60.3	25.5	14.2
Beef	100	53.9	30.8	15.3
Pork	100	55.6	29.4	15.0
Wheat flour	100	43.5	35.4	21.1
Sunflower oil	100	39.6	39.4	21.0

Source: Russian Statistical Yearbook, 1995. p.300.

Table A.5 Crop production: direct subsidies and prices for large agricultural enterprises
(rubles per ton)

	1992	1993	1994
All grains			
- revenue (market price + subsidy)	8620	44690	115500
- market price	8370	43690	112190
- subsidy	250	1000	3310
- share of subsidy in revenue, %	2.9	2.2	2.9
Sunflower seed			
- revenue (market price + subsidy)	17120	73250	312750
- market price	16660	72220	310250
- subsidy	460	1030	2500
- share of subsidy in revenue, %	2.7	1.4	0.8
Sugar beets			
- revenue (market price + subsidy)	2300	20570	61150
- market price	2230	20110	58900
- subsidy	70	460	2250
- share of subsidy in revenue, %	3.0	2.2	3.7
Potatoes			
- revenue (market price + subsidy)	8410	56270	272810
- market price	8100	54940	269670
- subsidy	310	1330	3140
- share of subsidy in revenue, %	3.7	2.4	1.2

Table A.6 Livestock production: direct subsidies and prices for large agricultural enterprises (rubles per ton)

	1992	1993	1994
Cattle			
- revenue (market price + subsidy)	40000	341730	932180
- market price	24120	275510	778020
- subsidy	15880	66220	154160
- share of subsidy in revenue, %	39.7	19.4	16.5
Hogs			
- revenue (market price + subsidy)	51090	528420	1534690
- market price	33180	439430	1237250
- subsidy	17910	88990	297440
- share of subsidy in revenue, %	35.1	16.8	19.4
Sheep			
- revenue (market price + subsidy)	34710	230260	673560
- market price	13400	180500	484840
- subsidy	21310	49760	188720
- share of subsidy in revenue, %	61.4	21.6	28.0
Poultry			
- revenue (market price + subsidy)	48000	533360	1723330
- market price	30670	470880	1474160
- subsidy	17330	62480	249170
- share of subsidy in revenue, %	36.1	11.7	14.5

Table A.6 continued

	1992	1993	1994
Milk			
- revenue (market price + subsidy)	8920	64820	210970
- market price	5670	48490	152270
- subsidy	3250	16330	58700
- share of subsidy in revenue, %	36.4	25.2	27.8
Wool			
- revenue (market price + subsidy)	178090	643250	2205220
- market price	178090	423280	970600
- subsidy	0	219970	1234620
- share of subsidy in revenue, %	0.0	34.2	56.0
Eggs (per 1000)			
- revenue (market price + subsidy)	2648	25110	210970
- market price	2018	21833	152270
- subsidy	630	3277	58700
- share of subsidy in revenue, %	23.8	13.1	27.8

Sources:

Basic Indicators of Agro-industrial Complex of Russia in 1993, Part I, p.34

Production and Economic Data on Agro-industrial Complex of Russia in 1994, Part I, p.36

Table A.7 Import of agricultural products

	1992			1993			1994		
	quantity, thou. tons	value, mln. USD	unit price, USD	quantity, thou. tons	value, mln. USD	unit price, USD	quantity, thou. tons	value, mln. USD	unit price, USD
Red meat	288	383	1330	85	116	1365	358	415	1159
Poultry	46	47	1022	74	73	986	496	441	889
Milk, dried	46	99	2152	15	38	2533	34	62	1824
Butter	25	40	1600	70	95	1357	103	133	1291
Wheat	17593	2563	146	5699	838	147	1181	161	136
Barley	3967	505	127	655	75	115	15	1	79
Corn	5490	827	151	4391	619	141	864	179	207
Soy oil	224	131	585	32	22	688	21	14	696
Sunflower oil	181	104	575	52	39	750	53	59	1113
Sugar, raw	2137	582	272	1667	489	293	1081	314	290
Sugar, refined	1554	582	375	1442	582	404	369	137	371

Sources:

Russian Federation in 1992, p. 54-55.

Russian Statistical Yearbook, 1994. p. 436-437

Russian Statistical Yearbook, 1995. p. 435.

Table A.8 Export of agricultural products

	1992			1993			1994		
	quantity, thou. tons	value, mln. USD	unit price, USD	quantity, thou. tons	value, mln. USD	unit price, USD	quantity, thou. tons	value, mln. USD	unit price, USD
Red meat	0.1	0.5	5000	0.05	0.03	600	1.8	1.7	944
Poultry	21.2	1.1	52	0.6	0.1	167	0.5	0.3	600
Milk, dried	7.7	9.5	627	13.4	8.4	627	52.9	38.2	722
Butter	0	0		0	0		0.1	0.1	1000
Wheat	2.7	0.2	74	1.8	0.2	111	18.6	1.6	86
Barley	1.8			2.5	0.3	120	264.0	18.1	69
Corn	0.6	0.1	167	10.6	1.2	113	13.9	1.2	86
Soy oil	1.5	1	667	0	0		0.1	0.0	667
Sunflower oil	0.3	0.2	667	0.1	0.05	500	56.9	29.0	510
Sugar, raw	0	0		0	0	??	1.2	0.4	333
Sugar, refined	6.2	1.6	258	0.07	0.03	429	6.1	2.1	344

Sources:

Russian Federation in 1992, p. 54-55.

Russian Statistical Yearbook, 1994, p. 436-437

Russian Statistical Yearbook, 1995, p. 435.

APPENDIX B. TABLES WITH PSEs CALCULATION

Table B.1 Estimation of PSEs for beef and veal

		Units	1992	1993	1994
1	Production marketed, total (live)	thou. tons	6081	5435	4750
2	- large agricultural enterprises	thou. tons	4681	3835	3100
3	- private subsidiary farms	thou. tons	1400	1600	1650
4	Production marketed, total (carcass)	thou. tons	3223	2881	2518
5	- large agricultural enterprises	thou. tons	2481	2033	1643
6	- private subsidiary farms	thou. tons	742	848	875
7	Weighted market price (carcass):	thou. rubles/ton	62	895	2594
8	- large agricultural enterprises*	thou. rubles/ton	46	520	1468
9	- private subsidiary farms**	thou. rubles/ton	119	1795	4710
10	All subsidies	billion rubles	153	675	1203
11	Subsidies per unit (carcass) (10/4)	thou. rubles/ton	47	234	478
12	Supported domestic price (7+11)	thou. rubles/ton	110	1129	3072
13	Reference price (carcass)***	USD/ton	1330	1365	1159
14	Exchange rate	rubles/USD	205	962	2276
15	Converted reference price (13*14)	thou. rubles/ton	273	1313	2638
16	Unit PSE (12-15)	thou. rubles/ton	-163	-184	434
17	Percentage PSE (16/12*100)	%	-148	-16	14

*- annual average procurement price

** - annual average city market price

*** - average price of import

Note: Production marketed by large agricultural enterprises in 1994 was defined on the basis of percentage structure of 1993 using the information on overall livestock sales. Production marketed by private subsidiary farms was defined on the basis of the changes in the structure of livestock herds.

Table B.2 Estimation of PSEs for pigmeat

		Units	1992	1993	1994
1	Production marketed, total (live)	thou. tons	3576	3138	2990
2	- large agricultural enterprises	thou. tons	1676	1257	1080
3	- private subsidiary farms	thou. tons	1900	1881	1910
4	Production marketed, total (carcass)	thou. tons	2539	2228	2123
5	- large agricultural enterprises	thou. tons	1190	892	767
6	- private subsidiary farms	thou. tons	1349	1336	1356
7	Weighted market price (carcass):	thou. rubles/ton	180	1540	4236
8	- large agricultural enterprises*	thou. rubles/ton	44	619	1743
9	- private subsidiary farms**	thou. rubles/ton	300	2155	5646
10	All subsidies	billion rubles	65	333	579
11	Subsidies per unit (carcass) (10/4)	thou. rubles/ton	26	149	273
12	Supported domestic price (7+11)	thou. rubles/ton	206	1689	4509
13	Reference price (carcass)***	USD/ton	1330	1365	1159
14	Exchange rate	rubles/USD	205	962	2276
15	Converted reference price (13*14)	thou. rubles/ton	273	1313	2638
16	Unit PSE (12-15)	thou. rubles/ton	-67	376	1871
17	Percentage PSE (16/12*100)	%	-33	22	41

*- annual average procurement price

** - annual average city market price

*** - average price of import

Table B.3 Estimation of PSEs for poultry.

		Units	1992	1993	1994
1	Production marketed, total (live)	thou. tons	2067	1844	1620
2	- large agricultural enterprises	thou. tons	1367	1244	1020
3	- private subsidiary farms	thou. tons	700	600	600
4	Production marketed, total (carcass)	thou. tons	1881	1678	1474
5	- large agricultural enterprises	thou. tons	1244	1132	928
6	- private subsidiary farms	thou. tons	637	546	546
7	Weighted market price (carcass):	thou. rubles/ton	91	924	2382
8	- large agricultural enterprises*	thou. rubles/ton	34	523	1638
9	- private subsidiary farms**	thou. rubles/ton	200	1755	3646
10	All subsidies	billion rubles	66	328	719
11	Subsidies per unit (carcass) (10/4)	thou. rubles/ton	35	195	488
12	Supported domestic price (7+11)	thou. rubles/ton	126	1120	2869
13	Reference price (carcass)***	USD/ton	1022	986	889
14	Exchange rate	rubles/USD	205	962	2276
15	Converted reference price (13*14)	thou. rubles/ton	210	949	2023
16	Unit PSE (12-15)	thou. rubles/ton	-84	171	846
17	Percentage PSE (16/12*100)	%	-67	15	29

*- annual average procurement price

** - annual average city market price

*** - average price of import

Table B.4 Estimation of PSEs for eggs

		Units	1992	1993	1994
1	Production marketed, total:	thou. tons	27871	26199	23600
2	- large agricultural enterprises	mln. eggs	27871	26199	23600
3	- private subsidiary farms	mln. eggs			
4	Weighted market price:	thou. rubles/1000	2	49	152
5	- large agricultural enterprises*	thou. rubles/1000	2	49	152
6	- private subsidiary farms**	thou. rubles/ton			
7	Conversion coefficient (eggs to kg)		0.056	0.056	0.056
8	Handling margin	%	25	25	25
9	Adjusted market price (4*7*1.25):	thou. rubles/tons	45	1083	3400
10	All subsidies	billion rubles	54	302	874
11	Subsidies per unit (7/1)	thou. rubles/ton	2	12	37
12	Supported domestic price (9+11)	thou. rubles/ton	47	1094	3437
13	Reference price **	USD/ton	713	793	784
14	Exchange rate	rubles/USD	205	962	2276
15	Converted reference price (13*14)	thou. rubles/ton	146	763	1784
16	Unit PSE (9-15)	thou. rubles/ton	-99	331	1652
17	Percentage PSE (16/12*100)	%	-211	30	48

* - annual average procurement price

** - EU export price

Table B.5 Estimation of PSEs for milk

		Units	1992	1993	1994
1	Production marketed, total:	thou. tons	41644	41371	36000
2	- large agricultural enterprises	thou. tons	26844	25271	19700
3	- private subsidiary farms	thou. tons	14800	16100	16300
4	Weighted market price:	thou. rubles/ton	19	96	458
5	- large agricultural enterprises*	thou. rubles/ton	6	49	152
6	- private subsidiary farms**	thou. rubles/ton	44	170	828
7	All subsidies	billion rubles	210	948	2085
8	Subsidies per unit (7/1)	thou. rubles/ton	5	23	58
9	Supported domestic price (7+11)	thou. rubles/ton	24	119	516
10	Fat content - domestic	%	3.50	3.50	3.50
11	Fat content - New Zealand	%	4.73	4.73	4.73
12	Transport cost, milk equivalent	USD/ton	17	18	18
13	Reference price ***	USD/ton	144	138	144
14	Adjusted reference price ****	USD/ton	124	120	124
15	Exchange rate	rubles/USD	205	962	2276
16	Converted reference price (14*15)	thou. rubles/ton	25	115	283
17	Unit PSE (12-15)	thou. rubles/ton	-1	3	234
18	Percentage PSE (17/9*100)	%	-4	3	45

*- annual average procurement price

** - annual average city market price

*** - New Zealand farmgate price

**** - price adjusted to domestic fat content and transportation cost

Table B.6 Estimation of PSEs for wheat

		Units	1992	1993	1994
1	Production marketed, total:	thou. tons	21746	22773	15435
2	- large agricultural enterprises	thou. tons	21320	22110	14700
3	- peasant farms	thou. tons	426	663	735
4	Weighted market price:	thou. rubles/ton	8	48	106
5	- large agricultural enterprises*	thou. rubles/ton	8	48	106
6	- peasant farms*	thou. rubles/ton	8	48	106
7	All subsidies	billion rubles	138	526	482
8	Subsidies per unit (7/1)	thou. rubles/ton	6	23	31
9	Supported domestic price (4+8)	thou. rubles/ton	15	71	137
10	Reference price **	USD/ton	146	147	140
11	Exchange rate	rubles/USD	205	962	2276
12	Converted reference price (10*11)	thou. rubles/ton	30	141	319
13	Unit PSE (9-12)	thou. rubles/ton	-15	-70	-181
14	Percentage PSE (13/9*100)	%	-106	-98	-132

* - annual average procurement price

** - average price of import

Note: the value for peasant farms is calculated using a share in total production of the commodity

Table B.7 Estimation of PSEs for corn

		Units	1992	1993	1994
1	Production marketed, total:	thou. tons	1113	559	361
2	- large agricultural enterprises	thou. tons	1091	543	344
3	- peasant farms	thou. tons	22	16	17
4	Weighted market price:	thou. rubles/ton	9	58	251
5	- large agricultural enterprises*	thou. rubles/ton	9	58	251
6	- peasant farms	thou. rubles/ton	9	58	251
7	All subsidies	billion rubles	14	21	18
8	Subsidies per unit (7/1)	thou. rubles/ton	13	38	49
9	Supported domestic price (4+8)	thou. rubles/ton	21	96	299
10	Reference price **	USD/ton	146	147	145
11	Exchange rate	rubles/USD	205	962	2276
12	Converted reference price (10*11)	thou. rubles/ton	30	141	330
13	Unit PSE (9-12)	thou. rubles/ton	-9	-46	-31
14	Percentage PSE (13/9*100)	%	-40	-48	-10

*- annual average procurement price

** - average price of import

Note: the value for peasant farms is calculated using a share in total production of the commodity

Table B.8 Estimation of PSEs for barley

		Units	1992	1993	1994
1	Production marketed, total:	thou. tons	6863	6748	6517
2	- large agricultural enterprises	thou. tons	6729	6551	6207
3	- peasant farms	thou. tons	135	197	310
4	Weighted market price:	thou. rubles/ton	6	38	77
5	- large agricultural enterprises*	thou. rubles/ton	6	38	77
6	- peasant farms	thou. rubles/ton	6	38	77
7	All subsidies	billion rubles	6	143	119
8	Subsidies per unit (7/1)	thou. rubles/ton	1	21	18
9	Supported domestic price (4+8)	thou. rubles/ton	7	59	95
10	Reference price **	USD/ton	127	115	79
11	Exchange rate	rubles/USD	205	962	2276
12	Converted reference price (10*11)	thou. rubles/ton	26	111	180
13	Unit PSE (9-12)	thou. rubles/ton	-19	-52	-85
14	Percentage PSE (13/9*100)	%	-274	-88	-90

*- annual average procurement price

** - average price of import

Note: the value for peasant farms is calculated using a share in total production of the commodity

Table B.9 Estimation of PSEs for sugarbeet/sugar

		Units	1992	1993	1994
1	Production marketed, total:	thou. tons	11209	7422	1358
2	- large agricultural enterprises	thou. tons	10989	7143	1312
3	- peasant farms	thou. tons	220	279	46
4	Weighted market price:	thou. rubles/ton	2	20	59
5	- large agricultural enterprises *	thou. rubles/ton	2	20	59
6	- peasant farms	thou. rubles/ton	3	24	56
7	All subsidies	billion rubles	29	80	33
8	Subsidies per unit (7/1)	thou. rubles/ton	3	11	24
9	Supported domestic price (4+8)	thou. rubles/ton	5	31	83
10	Coefficient (beet to sugar)	%	11	12	13
11	Retail price for sugar	thou. rubles/ton	88	494	910
12	Reference price **	USD/ton	272	293	290
13	Exchange rate	rubles/USD	205	962	2276
14	Converted reference price (13*14)	thou. rubles/ton	56	282	660
15	CRP in terms of beet (14*10/100)	thou. rubles/ton	6	33	83
16	Unit PSE (9-15)	thou. rubles/ton	-1	-2	-1
17	Percentage PSE (16/9*100)	%	-23	-7	-1

*- annual average procurement price

** - annual average price of imported raw sugar

Note: the value for peasant farms is calculated using a share in total production of the commodity

Table B.10 Estimation of PSEs for sugarbeet/sugar (alternative approach)

		Units	1992	1993	1994
1	Production (beet)	thou. tons	25548	25468	13901
2	Production marketed (beet)	thou. tons	11209	7422	1358
3	Production exchanged for sugar (beet)	thou. tons	14339	18046	12543
4	Coefficient (beet to sugar)	%	11	12	13
5	Sugar received from exchange	thou. tons	1506	2117	1587
6	Market price (beet)	thou. rubles/ton	2	20	59
7	Market price (sugar, wholesale)	thou. rubles/ton	58	329	607
8	Weighted market price:	thou. rubles/ton	4	33	75
9	All subsidies	billion rubles	29	80	33
10	Subsidies per unit (7/1)	thou. rubles/ton	3	11	24
11	Supported domestic price (8+11)	thou. rubles/ton	7	44	99
12	Retail price for sugar	thou. rubles/ton	88	494	910
13	Reference price **	USD/ton	272	293	290
14	Exchange rate	rubles/USD	205	962	2276
15	Converted reference price (13*14)	thou. rubles/ton	56	282	660
16	CRP in terms of beet (15*4/100)/	thou. rubles/ton	6	33	83
17	Unit PSE (beet) (11-16)	thou. rubles/ton	1	11	16
18	Percentage PSE (17/11*100)	%	16	25	16

*- annual average procurement price

** - annual average price of imported raw sugar

Note: the value for peasant farms is calculated using a share in total production of the commodity

Table B.11 Estimation of PSEs for sunflower seeds

		Units	1992	1993	1994
1	Production marketed, total:	thou. tons	1609	1538	1507
2	- large agricultural enterprises	thou. tons	1521	1399	1368
3	- peasant farms	thou. tons	88	139	140
4	Weighted market price:	thou. rubles/ton	17	72	310
5	- large agricultural enterprises*	thou. rubles/ton	17	72	310
6	- peasant farms**	thou. rubles/ton	17	72	310
7	All subsidies	billion rubles	37	31	17
8	Subsidies per unit (7/1)	thou. rubles/ton	23	20	11
9	Supported domestic price (4+8)	thou. rubles/ton	39	92	321
10	Reference price **	USD/ton	287	328	315
11	Exchange rate	rubles/USD	205	962	2276
12	Converted reference price (10*11)	thou. rubles/ton	59	316	717
13	Unit PSE (9-12)	thou. rubles/ton	-19	-223	-396
14	Percentage PSE (13/9*100)	%	-49	-242	-123

*- annual average procurement price

** - c.i.f. price to Baltic ports

Note: the value for peasant farms is calculated using a share in total production of the commodity

Table B.12 Estimation of PSEs for sunflower seed/oil (alternative approach)

		Units	1992	1993	1994
1	Production (seed)	thou. tons	3110	2765	2553
2	Production marketed (seed)	thou. tons	1609	1538	1507
3	Production exchanged for oil (seed)	thou. tons	758	1211	710
4	Coefficient (seed to oil)	%	42	41	41
5	Oil received from product exchange	thou. tons	318	496	291
6	Market price (seed)	thou. rubles/ton	17	72	310
7	Market price (oil, wholesale)	thou. rubles/ton	58	584	2028
8	Weighted market price:	thou. rubles/ton	19	146	477
9	All subsidies	billion rubles	29	80	33
10	Subsidies per unit (7/1)	thou. rubles/ton	18	52	22
11	Supported domestic price (8+10)	thou. rubles/ton	37	198	499
12	Retail price for oil	thou. rubles/ton	70	707	2454
13	Reference price **	USD/ton	667	500	510
14	Exchange rate	rubles/USD	205	962	2276
15	Converted reference price (13*14)	thou. rubles/ton	137	481	1161
16	CRP in terms of seed (15*4/100)	thou. rubles/ton	57	197	476
17	Unit PSE (seed) (11-16)	thou. rubles/ton	-21	0	23
18	Percentage PSE (17/11*100)	%	-56	0	5

*- annual average procurement price

** - annual average price of exported sunflower oil

Note: the value for peasant farms is calculated using a share in total production of the commodity

Table B.13 Estimations of PSEs for potatoes

		Units	1992	1993	1994
1	Production marketed, total:	thou. tons	2964	3402	2748
2	- large agricultural enterprises	thou. tons	2732	2131	1350
3	- private subsidiary farms	thou. tons	232	1271	1398
4	Weighted market price:	thou. rubles/ton	9	72	462
5	- large agricultural enterprises*	thou. rubles/ton	8	55	270
6	- private subsidiary farms**	thou. rubles/ton	26	100	647
7	All subsidies	billion rubles	1	3	4
8	Subsidies per unit (7/1)	thou. rubles/ton	0	1	2
9	Supported domestic price (4+8)	thou. rubles/ton	10	73	463
10	Reference price ***	USD/ton	97	127	74
11	Exchange rate	rubles/USD	205	962	2276
12	Converted reference price (10*11)	thou. rubles/ton	20	122	168
13	Unit PSE (9-12)	thou. rubles/ton	-10	-50	295
14	Percentage PSE (13/9*100)	%	-103	-68	64

*- annual average procurement price

** - annual average city market price

*** - average price of export from Czech

Note: sales for PSF are based upon the data from budget surveys

REFERENCES

- "Agricultural Enterprise Restructuring in Russia." Paper presented at the Ad hoc Group's meeting in Organisation for Economic Co-operation and Development (OECD), Paris, France, October 1995.
- Agricultural Policies, Markets and Trade in OECD Countries. Monitoring and Outlook. 1995. Paris: Organisation for Economic Co-operation and Development, 1995.
- Agro-Food Sector Policy in OECD Countries and the Russian Federation. Paris: Organisation for Economic Co-operation and Development, 1996.
- Basic Indicators of Agroindustrial Complex of Russia in 1993. Moscow: Ministry of Agriculture of Russia, 1994.
- Cahil C., Legg W. "Estimation of Agricultural Assistance Using Producer and Consumer Subsidy Equivalents: theory and practice" in Agricultural Economics. The International Library of Critical Writings in Economics. Edited by H. Peters. Edward Elgar Publishing Limited, Aldershot, UK, 1995.
- Decree of the Government of Russian Federation of January 23, 1993, #63, On Emergency Measures to Provide Financial Support to Agroindustrial Complex of Russian Federation. Moscow, Russia, 1993.
- Decree of the Government of Russian Federation of April 12, 1993, #303, On Additional Measures to Stabilize Agroindustrial Production in 1993. Moscow, Russia, 1993.

Decree of the Government of Russian Federation of February 23, 1994, #126, On Economic Conditions of Operating of Agroindustrial Complex of Russian Federation in 1994.

Moscow, Russia, 1994.

Decree of the Government of Russian Federation of March 10, 1995, #240, On Economic Conditions of Agroindustrial Complex Development in Russian Federation in 1995.

Moscow, Russia, 1995.

Decree of the Government of Russian Federation of February 7, 1996, #135, On Measures to Stabilize Economic Development of Agroindustrial Complex of Russian

Federation in 1996". Moscow, Russia, 1996.

Food and Agricultural Policy Reforms in the Former USSR. An Agenda for the Transition.

Studies of Economies in Transformation, #19. Washington, The World Bank, 1992.

Former Soviet Union: Agricultural Performance and Trade Outlook Indicators. USDA/ERS

paper presented to Organisation for Economic Co-operation and Development. Paris,

February 1996.

Gardner B., Brooks K. Retail Food Prices and Market Integration in Russia: 1992-1993.

Paper prepared for a joint session of AAEA and ACES, Boston, MS, January 3-5,

1994.

Gardner B. Food Marketing under Price Liberalization in the former USSR: Marx is Dead but

Adam Smith has not yet Risen. Paper prepared for the 14th World Bank Agricultural

Symposium, Washington, January 5-6, 1994.

Handbook of Information for Regions of Russian Federation in 1993. Moscow: Ministry of Agriculture of Russia, 1994.

Handbook of Information for Regions of Russian Federation in 1994. Moscow: Ministry of Agriculture of Russia, 1995.

Kiselev S.V. The State Regulation of Agriculture in Transition Economy. Moscow: The Institute of Economics, 1994.

Kholod L. The Performance of Agriculture in Russian Federation. The Report for Minister of Agriculture of Russia, 1995.

Land and Agrarian Reform in Russia: Results of 1991-1994 and Recommended Improvements. Report prepared by The Agrarian Institute (Moscow, Russia) for the Conference on Food and Agrarian Policy organized by The Citizens Network For Foreign Affairs, Inc., Moscow, September, 1995.

Leonard C.S. Serova E.V. Braking and Entering: Transformation to a Market Economy in Agriculture, Russia, 1991-1995. Paper presented at ASSA Meetings in January, 1996.

Liefert W., D. Sedik, R. Koopman, E. Serova, O. Melyukhina. Producer Subsidy Equivalents for Russian Agriculture: Estimation and Interpretation. Paper for AAEEA Invited Paper Panel Presented at ASSA Meetings, San Francisco, CA January 5-7, 1996.

Livestock in Russian Federation, 1992. Moscow: State Statistical Committee of Russia, 1993.

Price Handbook for Agricultural and Industry Products in Regions of Russian Federation 1992. Moscow: Ministry of Agriculture of Russia, 1993.

Private subsidiary farms of Russian Federation. Moscow: State Statistical Committee of Russia, 1994.

Production and Economic Data on Agroindustrial Complex of Russia in 1994. Moscow: Ministry of Agriculture of Russia, 1994.

Program of Agrarian Reform in Russian Federation in 1994-1995, adopted by the decree of the government of Russian Federation #791 of July 6 1994. Moscow, Russia, 1994.

Review of Agricultural Policy: Estonia. Working Party Paper. Paris: Organisation for Economic Co-operation and Development. 1996.

Review of Agricultural Policies. Czech Republic. Paris: Organisation for Economic Co-operation and Development, 1995.

Review of Agricultural Policy, Market and Trade Development in Russia in 1995. Paper presented at the Ad hoc Group's meeting in Organisation for Economic Co-operation and Development, Paris, February 1996.

The Russian Federation in 1992. Moscow: State Statistical Committee of Russia, 1992.

Russian Statistical Yearbook, 1994. Moscow: State Statistical Committee of Russia, 1994.

Russian Statistical Yearbook, 1995. Moscow: State Statistical Committee of Russia, 1995.

Social and Economic Performance of the Russian Federation in 1993. Moscow: State Statistical Committee of Russia, 1995.

Social and Economic Performance of Russia 1993-1994. Moscow: State Statistical Committee of Russia, 1995.

Sales of agricultural products by agricultural enterprises in 1993. Moscow: State Statistical Committee of Russia, 1994.

Sheffield S., Foster C., Mitchell J., Hoskin R. FSU Agriculture and Trade: 1995/96 Situation and Outlook. ERS, USDA. Paper presented at the Organisation for Economic Co-operation and Development Meeting, Paris, October 1995.

Wilson W., Belozertsev A. Russian Grain Trading and Marketing: Evaluation and Struggles. Agribusiness, vol. 11, No. 1, pp. 1-12, 1995.