

# **Distortions to Agricultural Incentives in Russia**

**William Liefert and Olga Liefert**

Senior Agricultural Economist and Consultant,  
Economic Research Service,  
U.S. Dept. of Agriculture,  
1800 M St, NW Washington, DC 20036-5831  
Phone: 202-694-5156, Fax: 202-694-5795  
[wliefert@ers.usda.gov](mailto:wliefert@ers.usda.gov) and [oliefert@ers.usda.gov](mailto:oliefert@ers.usda.gov)

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## Executive summary

- In the planned economy period, the Soviet government heavily supported both agricultural producers and food consumers. Large budget subsidies were necessary to support both groups. The assistance resulted in overproduction and overconsumption of agricultural products, in particular livestock goods, relative to the USSR's real income and resources.
- The move from a planned to a market economy during the transition period substantially reduced support to both producers and consumers. This resulted in a severe drop in agricultural production, especially of livestock products and animal feed.
- During transition, producer assistance has gone through four distinct phases: (1) in 1992 a steep plunge, resulting in high taxation; (2) over 1993-97 a steady but large move from taxation to support; (3) in 1998-99 a major drop in support; and (4) since 2000 a rise in aggregate assistance, though with a divided outcome, whereby livestock products and sugar are supported while grain and sunflowerseed are generally taxed.
- During transition, budget subsidies to agriculture have substantially diminished. The main discretionary policy used to support agriculture has been soft loans to farms by state or parastatal lenders, with most of the debt eventually being written off. The fall in budget subsidies does not reflect the desire by the government to downsize the sector, but rather its financial straits. Also, the drop in budget subsidies does not explain the fluctuating pattern of support described above.
- Throughout transition, agricultural producers have been subsidized to some degree by the government's energy pricing policy, whereby domestic users of energy products pay prices below the prices at which Russia exports energy. By the mid-2000s, such "subsidies" existed to some degree for oil products, and strongly for natural gas. The latter, however, is not heavily used in agricultural production. Also, the gas subsidy is not specific to agriculture, as all domestic users of natural gas pay less than export prices.
- Most of the fluctuations in the calculated levels of assistance to agriculture has come from changes in the gaps between domestic and border prices. Not only have the price gaps varied, but the size of the gaps has been generally large. Conventional border measures cannot explain most of the magnitude or fluctuation of the gaps. Agricultural import tariffs have been moderate, with the annual average tariff ranging from 10 to 15 percent. The most important border measures have been a complicated system of import controls for sugar since the late 1990s, a 20 percent export tariff for sunflowerseed imposed in 2000, and a restrictive regime of tariff rate quotas for meat imports created in 2003.
- The main cause of the large price gaps and their variation appears to be movement in the real exchange rate combined with poor transmission to domestic prices. Agricultural policies, especially at the regional level, account for part of the incomplete transmission. Another apparent cause is deficient infrastructure — physical, commercial, and institutional — which works to isolate domestic regional markets from international markets.
- During transition, import tariffs for manufactured goods have been on average between 8 and 12 percent. The border protection for non-farm products indirectly reduces the real

level of assistance to agriculture. By the mid-2000s, assistance to agriculture was moderately higher than for goods in other tradable sectors, which means that policy was helping the agro-food sector relative to the rest of the economy.

- The large decline in budget subsidies to the agro-food sector during transition has eliminated the support that food consumers enjoyed during the planned period. In the place of those subsidies, agricultural import tariffs have taxed consumers.
- Since 2000, Russia has enjoyed relatively high GDP growth and rising world prices for its energy exports, which have increased government revenue. In 2005, the government announced that, as part of a new social welfare policy, agriculture will be one of four areas to receive expanded funding, along with health, education, and housing. In agriculture, the priority will be on reviving the livestock sector.
- Russia's accession to the World Trade Organization might not liberalize the country's agricultural policies. With the exception of tariff rate quotas for meat imports and the complex sugar import regime, Russia's border and support measures currently are fairly moderate. For both tariffs and domestic support, Russia is asking for bound levels above current behaviors. Even if the negotiated levels lay somewhere between current behaviors and Russia's requested levels, WTO entry would not liberalize the country's policies.
- Russia's current agricultural trade flows indicate that the country has a comparative advantage in producing grain and sunflowerseed and a comparative disadvantage in producing livestock products and sugar. Russian policy and market conditions are working to tax production of the former and support production of the latter. The government appears to be more concerned with reviving the livestock sector than with capitalizing on the country's potential as a bulk crop exporter.
- Russia's support policies are generally consistent with political economy theory. The livestock and sugar sectors are import-competing and have a comparative disadvantage in the world market. Theory predicts that these features will generate support for the sector. In agriculture as a whole, wages and incomes have fallen relative to the rest of the economy. In the past five years, the share of food in total consumer expenditure has dropped. From a political economy perspective, these two developments are also consistent with increasing support to agriculture.

# **Distortions to Agricultural Incentives in Russia**

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## **Introduction**

This chapter examines and measures policy distortions to producer and consumer incentives in Russian agriculture. The empirical scope is from the mid-1980s (of the Soviet planned period) to the mid 2000s. Two general types of distortion are investigated – direct and indirect. Direct distortions result from policies specific to the agro-food economy, and include budget subsidies, the pricing of inputs, and market price support. Indirect distortions result from policies outside of agriculture, the main distortion examined in this chapter being trade policy (specifically import tariffs) for non-farm products.

A special focus of the chapter is on explaining the strong fluctuation in observed producer support during the transition period. As identified in the summary, the main cause of the fluctuation is movement in Russia's exchange rate combined with policies and poor market institutions and infrastructure inherited from the Soviet period. The latter impede transmission of changes in the exchange rate to domestic prices, thereby contributing to gaps between domestic and border prices. The policy implication is that strengthening macroeconomic stability and improving domestic institutions and infrastructure might do as much or more to reduce price gaps and their distorting effects as would liberalizing agricultural and trade policies.

To examine and measure the exchange rate-transmission effect for Russian agriculture during transition, we use a method from Liefert (2007) for decomposing changes in agricultural producer prices. The key variables in the decomposition are world prices, the exchange rate, and agricultural import tariffs. The method allows one to determine which of these variables is dominant in changing domestic prices and thereby incentives to produce, consume, and trade goods. The method also allows one to measure the degree to which incomplete transmission of changes in exchange rates and world prices affects domestic producer prices.

The chapter is organized as follows. The first section examines agricultural policies and the magnitude of assistance to producers and consumers during the Soviet planned period. The next section examines the policies and levels of assistance to producers and consumers during the transition period. The policy set includes budget subsidies, input pricing, border measures, and the indirect assistance (or taxation) that results from border measures for nonagro-food products. This section will also examine the issues discussed in the previous paragraphs – how fluctuating exchange rates have combined with incomplete transmission to contribute to domestic to border price gaps. The final section discusses the likely future direction of Russian agricultural policies and incentive effects, and in so doing draws on political economy theory.

### **Agricultural policy and assistance during the Soviet planned period**

Serfdom ended in the Russian Empire in 1861. After emancipation, however, the gentry and state retained over half of all agricultural land. Although the newly-freed peasants were given plots to farm, they had to “redeem” their plots with payments that typically lasted for decades. Until they wholly paid off their land, the peasants had to belong to their village commune, or *mir*. The *mir* imposed strong constraints on its members, such as collective responsibility for all debts and periodic redistribution of plots that households farmed. These restrictions and the huge debt the peasants carried for their land made it difficult for them to become independent producers. Although the Stolypin reforms of 1906 and 1910 tried to weaken communal agriculture imposed by the *mir* and promote independent landholdings, World War I and the revolution intervened before a strong tradition of profitable independent farmers could be established.<sup>1</sup>

When the Bolsheviks came to power in 1917, they redistributed all land held by the gentry to the peasants. During the civil war against their various internal enemies, however, the

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<sup>1</sup> For a good review of Russian agricultural policy and developments during both the immediate pre-Soviet and Soviet periods, see Gregory and Stuart (1990), which is the source of most of the specific figures given in our discussion of these periods.

Bolsheviks imposed the harsh economic policy of War Communism. For agriculture and the peasants, the policy essentially involved confiscation of most output with little compensation.

After the Bolsheviks secured their power in the early 1920s, they abandoned War Communism and created the milder New Economic Policy (NEP). Peasants were allowed to buy and sell inputs and outputs under fairly free market conditions, and taxation was not onerous. Incentives to produce improved, so that by 1928 agricultural output was about 10 percent higher than in 1913 (immediately before World War I). The NEP helped generate a class of relatively prosperous and independent peasant producers — the “kulaks”.

In 1929, soon after Stalin achieved dominance in the Soviet leadership, the USSR began the collectivization of agriculture. The peasants’ land, livestock, and equipment were confiscated, and large new farms were formed from these assets which the peasants had to join. Many resisted, often by slaughtering their livestock, such that animal numbers in the mid-1930’s were down by about 40-50 percent compared to 1928. The state responded brutally, targeting the more prosperous kulaks. The chaos and repression led to a serious famine, which the government abetted to punish and cow the peasantry. Conquest (1986) puts total peasant deaths from all collectivization-related events — executions, imprisonment, resettlement, and the famine — at 14 million. Although the famine and repression were centered in the Ukraine, the most agriculturally rich part of the USSR, Russia was also severely affected.

One motive for collectivization was the state’s desire to extract “forced savings” from agriculture to promote rapid industrialization. This was to be achieved by paying farms low prices for agricultural output, resulting in low wages for farm labor. Yet during the 1930s agriculture also received considerable investment and input allocations. Researchers disagree as to whether agriculture as a producing sector provided substantially more output and resources to the rest of the economy than it received. There is agreement, however, that farm workers were exploited by the low wages set for them. By 1933, their per capita income was only about half the level of 1928, and by the late 1930s it was still only about three-quarters the level.<sup>2</sup>

Collectivization integrated agriculture into the country’s planned economy, and created rural structures and institutions that remained largely intact for the rest of the Soviet period. The

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<sup>2</sup> Industrial workers were also exploited by low real wages, though probably not as strongly as farm workers. During the 1930s, the share of investment in GDP soared at the expense of consumption.

collective farms received input allocations and output targets directly from the state planners. Large “state farms” also existed, and steadily grew in number after the Second World War, though over time the differences between them and collective farms became slight. Various agricultural reforms and organizational changes, both at the farm level and above, were attempted during the postwar period, but always with only minor effect on the basic system of farm management and incentives and on productivity.

Beginning in the mid-1960s, state investment and subsidies to agriculture began to increase substantially. According to Trembl (1982), agricultural subsidies grew from 2 billion rubles in 1965 to 37 billion rubles in 1980, so that by 1980 subsidies equaled 54 percent of the value of national income produced by agriculture. Farm worker income also rose substantially, such that the income gap between agricultural and non-agricultural workers narrowed. Although output also grew during this time, productivity growth was poor (Johnson and Brooks 1983). Output rose mainly because of the large rise in investment, subsidies and input use, rather than from more productive use of resources.

The rise in investment and subsidies centered on increasing production of livestock products, which was a major part of the leadership’s program to improve consumers’ standard of living. Consequently, from 1970 to 1990 Soviet (and Russian) livestock herds and output rose by about 50 percent. The rise in feed requirements also stimulated the crop sector, such that by the late 1980s output of feed grain was also up by about half compared to two decades earlier. In 1990, primary agriculture accounted for about 13 percent of Russian GDP and employment (Table 1).

By 1990, Soviet/Russian per capita consumption of livestock products and foodstuffs in general compared favorably to levels in many rich Western countries. For example, Soviet per capita meat consumption was 75 kilograms, compared to 72 in Great Britain and 62 in Finland. Since Soviet per capita GDP was less than half that of most OECD countries, the USSR was producing and consuming high-cost livestock products at a much higher volume than one would expect based on the country's real income (Sedik 1993).

To support the high levels of production and consumption of livestock products and animal feed during the 1970s and 1980s, high rates of assistance to both producers and consumers were necessary. Figure 1 presents nominal rates of assistance (NRAs) for Soviet

agricultural producers in 1986 (the percentage by which receipts by farmers are above what they would be without agro-food policy interventions. They are calculated from producer support estimates (PSEs) for the USSR by Cook, Liefert and Koopman (1991). Although the NRAs in the figure cover the entire Soviet Union rather than just Russia, in 1986 Russia accounted for 46 percent of Soviet agricultural output (USSR Central Statistical Department 1988, p. 426). The commodities for which Cook et al. compute PSEs accounted for 80 percent of Russia's agricultural production in 1986.

Like PSEs, the NRA estimates cover two types of support to producers – budget transfers and market price support (MPS), the latter being the difference between the domestic and border price that results from price and trade policies. Computing MPS requires an exchange rate for converting border prices from foreign to domestic values. In their PSE calculations, Cook et al. do not use the official Soviet exchange rate of 0.6 rubles to the U.S. dollar, which strongly overvalued the ruble. Use of this exchange rate would overstate support to producers, by pushing down border prices for commodities measured in ruble values, which in turn would push the PSE (and NRA) values up. Rather, Cook et al. estimate and use a shadow exchange rate of 1.9 rubles to the dollar.

In Figure 1, the producer aggregate NRA value is based on the assumption that the NRA calculated from those commodities for which Cook et al. present PSEs also gives the aggregate NRA for those commodities for which Cook et al. do not present PSEs. This means that the aggregate NRA computed from the Cook et al. PSE commodities gives the NRA for total agricultural output.

The results in Figure 1 indicate that Soviet agricultural policies in the 1980s heavily supported producers. If the aggregate NRA is accurate, in 1986 producers received revenues from production that were about 30 percent higher than what they would have received if no budget transfers or market intervention-type agricultural price and trade policies had existed. Sugar producers received extremely high support and livestock producers above average support, while producers of sunflowerseed, and especially grain, received below average support. About



three-fifths of the assistance to agriculture was budget transfers, with the main transfer subsidy being for input use, and the other two-fifths of assistance was MPS.<sup>3</sup>

Besides budget transfers and MPS, Soviet (and Russian) agricultural producers in the planned period were supported in a third way – through the pricing policy for physical capital inputs, such as tractors, combines, and trucks, as well as for material inputs, such as fuel and fertilizer. Farm purchase prices for these inputs were set below either the real cost of domestically producing them, or below the prices at which the Soviet Union exported the products (as in the case of fuel and other energy). Evidence for the argument that Soviet input price policy subsidized agricultural producers is that when Russia liberalized prices and trade at the beginning of its transition in the early 1990s, producer output prices rose much less than producer input prices. This meant that agricultural producers' domestic terms of trade (output prices divided by input prices) deteriorated. For example, from 1990 to 1994, Russian producers' terms of trade worsened by about 75 percent (OECD 1999).

The PSEs by Cook et al. on which the producer NRAs are based do not include the subsidy that producers received from input price policies. The input subsidies included in the PSEs and NRAs cover only direct budget transfers. The reason for the omission is that PSEs are conventionally defined as measuring the effect of policies that are *specific to agriculture*, while all users of fuel and other forms of energy in the Soviet Union paid prices below the country's export prices for the products, not just farmers. Nonetheless, input price policies did increase the real level of support to agricultural producers, especially when support is assessed using world trade prices as the opportunity cost values of tradable inputs. Like agriculture-targeted subsidies, Soviet input price policies contributed to distorted excess resource use and agricultural overproduction in the planned period.

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<sup>3</sup> OECD computes annual PSEs for Russian agriculture during the Soviet period from 1986 through 1991, as well as for the subsequent transition years. Producer NRAs could therefore be calculated based on these PSE values. However, in its Russia PSE calculations for 1986-89, OECD uses the Soviet official exchange rate of 0.6 rubles to the dollar, while for 1990-91 OECD adjusts the official rate to reflect market-influenced rates. OECD's aggregate agricultural PSE for Russia in 1986 is 83 percent, which contrasts with the aggregate PSE for Soviet agriculture from Cook et al. of 26 percent. Recognizing that the official exchange rate overstates the value of the ruble, OECD also experiments in computing PSEs with exchange rates adjusted by using the World Bank Atlas Conversion Factor (OECD 1998, p. 170). The adjusted exchange rate for 1986 is 1.24 rubles to the dollar. Use of this exchange rate reduces the Russian aggregate PSE for 1986 to 65 percent, which is still high relative to the 1986 Cook et al. PSE for the Soviet Union (based on an exchange rate of 1.9 rubles to the dollar).

Figure 1 indicates that during the Soviet period, consumers of agro-food products were also generally supported. The consumer tax equivalents (CTEs) in the figure are based on estimates of consumer support estimates (CSEs) for Soviet consumers in 1986 by Cook et al., including their use of the shadow exchange rate of 1.9 rubles to the dollar. As with the producer NRAs, the aggregate CTE value is based on the assumption that the CTE calculated from commodities for which Cook et al. present CSEs also gives the aggregate CTE for those commodities for which Cook et al. do not present CSEs. For CTEs, positive values indicate taxation and negative values assistance. For example, the aggregate CTE value of about minus 25 percent means that consumers were paying prices for agricultural goods a quarter lower than the border price.

The CTEs in Figure 1 are for the final consumers of food purchased at the retail level. The reason both producers and consumers of agricultural products could be supported during the Soviet period is that food consumers were subsidized at the processing level. Food processors sold their output to retailers at prices below their production costs, and received state subsidies to cover the difference. The figure shows that although food consumers in general were subsidized, and especially those of livestock products and grain, consumers of sugar and sunflowerseed were taxed by paying border prices. In the USSR, the retail purchasers of sugar in particular paid high sales taxes. Yet, the CTE values in Figure 1 understate the real support to consumers (or overstate the level of taxation for specific commodities), given that the Soviet input price policies discussed earlier subsidized consumers by lowering food prices.<sup>4</sup>

On the other hand, the Soviet economy involved certain costs to consumers that could be viewed as systemic “taxation.” Retail prices for most foods were set below not just the full cost of production and opportunity cost border prices, but also below the internal market clearing

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<sup>4</sup> OECD also computes annual CSEs for Russian agriculture from 1986 through 1991, on which CTE calculations could be based. As with its PSE estimates, however, the OECD uses the Soviet official exchange rate, though it again also experiments using an exchange rate adjusted by the World Bank Atlas Conversion Factor. In addition, the OECD CSE estimates do not measure support to food consumers at the retail level, but rather at the farm level; that is, the CSEs cover the effect on consumers from *farm level policies alone*. The CSEs therefore do not capture the large support to consumers that came from the budget subsidies given to the food processing industry. For these reasons, OECD's CSEs for the planned period show heavy taxation rather than support to consumers, with the aggregate CSE in 1986 being minus 72 percent. This contrasts with the aggregate CSE from Cook et al. of a positive 34 percent. (Bear in mind that with conventionally computed CSEs, a positive value means that consumers are supported and a negative value they are taxed. This contrasts with the CTEs calculated in this World Bank project, where a negative CTE value means support and a positive value taxation.)

price.<sup>5</sup> Consequently, excess demand existed, which created artificial market shortages. The excess demand led to allocation by queuing and other search costs for food. This means that the prices used by Cook et al. to compute CSEs understate the full cost to consumers of obtaining food, which in turn overstates the real subsidy that consumers received from paying low prices. More generally, by determining the volumes and mix of all consumer goods to be produced, the Soviet planned economy “taxed” consumers by depriving them of consumer sovereignty. The population was consuming a sub-optimal mix of goods compared to what they would have purchased and consumed had a market-oriented economy been responding to their demand for goods and services. From a narrow point of view, Soviet food consumers were subsidized. From a larger point of view, the subsidy is less than that revealed by the CTEs in Figure 1.

Although the results in Figure 1 are specific to 1986, Soviet/Russian agricultural and food policies did not change substantially during the last years of the USSR through to 1991 (although there were some minor steps toward policy liberalization). In 1990, budget subsidies to the Soviet agro-food system alone equaled about 10 percent of GDP. Large subsidies were continuing to support both ends of the food chain.

### **Assistance during the transition period**

Although minor economic reforms began in Russia during the late planned period, the major reforms of the transition period began in 1992. The planned economy was replaced by a market-oriented one, although in agriculture the state continued to a diminishing degree to help farms obtain inputs, and to purchase a nontrivial share of output of certain commodities (such as grain). Before examining the key transition agricultural policies and their effects, it would be useful to identify the main types of producers during the reform period.

By the mid-1990s, there were three types of agricultural producers, which have remained throughout the transition period: the former state and collective farms, family farms, and

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<sup>5</sup> Soviet consumer prices were set low not only for food but also for other many goods and services, such as most clothing, shoes, toiletries and other personal items, housing and transport.

household plots (Liefert 2001). During the early transition years, most of the former state and collective farms were "reorganized" as joint stock companies owned by their management and workers. They produce most of the country's bulk crops – grain, sunflowerseed, and sugar. Family farms are a creation of the reform period, but have not flourished. The 260,000 or so family farms existing in the mid-2000s average about 70 hectares in size, and account for no more than 5 percent of the country's agricultural land and output (Rosstat 2004, pp. 444-46). The household plots are tended by families associated with the large farms. Though averaging only half a hectare in size, by the mid-2000s the plots were producing about half of the country's total agricultural output, and most of its livestock products, potatoes, and vegetables (Rosstat 2004, p. 444). One reason the plots account for such a disproportionate share of total agricultural output is because they specialize in high-value products relative to their land use.

There were three main transition policies that affected agricultural production and consumption: the severe reduction of budget subsidies; price liberalization; and trade liberalization. Each of these policies can be matched with one of the three main types of support during the planned period – budget subsidies, input price policy, and market price support – and in each case the transition policy substantially reduced the support maintained during the planned period. A more detailed discussion of these three policies will be given later. What follows is a brief examination of how the major transition policies affected agricultural output.

Price liberalization resulted in prices for both agricultural outputs and inputs jumping to reflect the actual high cost of production. Input prices rose substantially more than output prices, such that farmers' terms of trade worsened (as discussed earlier). Trade liberalization reduced the market price support of the planned period, the isolated effect being a drop in real output prices for most commodities. Trade liberalization also resulted in domestic prices for tradable agricultural inputs, such as fuel and fertilizer, rising closer to Russian export prices. These developments hurt domestic producers' terms of trade vis-à-vis inputs even more (Liefert and Swinnen 2002). The terms of trade deterioration resulted in a plunge in input use. For example, in 2000 Russian farms used only about a quarter as much gasoline and diesel fuel as in 1990. Also over this time span, mineral fertilizer use per hectare of sown land fell from 88 to 19 kilograms (Goskomstat 2002, pp. 410-11).

The slashing of budget subsidies and worsening of producers' terms of trade caused a severe drop in agricultural output, especially in the livestock sector (figure 2).<sup>6</sup> Crop production has fluctuated throughout the transition period, reflecting the vagaries of weather in Russia. The trend through 1998, though, was clearly negative, with some rebound thereafter. Table 1 shows that from 1990 to 2003, agriculture's share in GDP fell from about 13 to 4.6 percent. The decline in primary agricultural output in the 1990s was matched by a big drop in food processing.

Figure 2 shows that industrial output decreased substantially during transition, which suggests that the planned economy also "subsidized" industry relative to how a market-driven economy would have behaved. The major sector of the economy that did not decline much was services. Ad hoc evidence suggests that many services not provided by the planned economy came into being during the early transition years, which Russia's statistical system had difficulty reporting. Thus, Figure 2 might overstate the initial drop in services and understate their later growth. This suggests that the planned economy subsidized both agriculture and industry vis-à-vis the service sector. Whether agriculture was assisted more than other tradable sectors prior to the transition is unclear.

Tables 2 and 3 present producer NRAs for the transition period. The row "Total agriculture including NPS" in Table 2 gives the annual aggregate NRA for agricultural producers, and provides the data for Figure 3. Table 3 gives commodity-specific producer NRAs, as well as aggregate NRAs for (net) imported and exported commodities, thereby providing the data for Figures 4 and 5. The relative rate of assistance (RRA) at the bottom of Table 2 expresses assistance to agricultural producers relative to that to producers of tradable non-agricultural goods (discussed later).

The NRAs are calculated mainly from OECD's PSE database for Russia. "Covered products" in Table 2 refer to those commodities for which we compute individual NRAs. As the bottom row of Table 3 shows, these products cover 77 percent of all Russian agricultural output in 1992, although the figure falls to 65 percent by 2005. The coverage for traded agricultural

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<sup>6</sup> The large drop in production of livestock goods resulted in a substantial decline in their per capita consumption. Consumption of staple foods such as bread and potatoes, however, did not fall much, or even increased (Liefert and Swinnen 2002). This means that the big decline in agricultural output did not create serious problems for overall food security. Crop output fell mainly because the large decrease in livestock production reduced demand for feed grain. The drop in crop output therefore did not reduce food available for human consumption.

products, however, is higher. The commodities for which we calculate individual NRAs are those for which OECD provides commodity-specific budget subsidies and computes market price support.<sup>7</sup> The aggregate NRAs presented can cover all of agricultural production, under the assumption that the annual aggregate NRA computed from our covered commodities gives the NRA for uncovered commodities as well.

When Russia began its major economic reform in 1992, the country abolished the official exchange rate of the Soviet period and moved to a system of largely market-determined exchange rates. Thus, OECD's Russian PSEs for the transition period beginning in 1992 stop being based on overvalued official exchange rates.

The negative value for producer assistance in 1992 in Figure 3 reveals a plunge in producer support from the positive assistance during the planned period. In fact, during transition producer assistance, as measured by the aggregate NRA, has fluctuated considerably, with definite turning points: (1) a huge decline in 1992, resulting in taxation; (2) a steady but large rise over 1993-97, such that during 1994-97 producers in the aggregate were being assisted; (3) a major decline over 1998-1999, such that by the latter year aggregate support was almost nil; and (4) a rebound beginning in 2001, such that by 2005 assistance equaled 20 percent.

Although the commodity-specific producer NRAs in Figure 4 show some variation from the movement in the aggregate NRA, they support the general pattern as revealed in Figure 3, with largely the same turning points.<sup>8</sup> The NRA for importables in Figure 5 also generally follows the pattern of Figure 3. Net imported agricultural products throughout the transition include all the meats, milk, sugar, and corn, while the remaining grains, sunflowerseed, and eggs have switched during transition between net export and import status (though sunflowerseed in almost all years has been a net export). Figure 5 shows that exportables have not closely followed the NRA pattern of Figure 3, rather their NRA has oscillated more on a yearly basis.

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<sup>7</sup> Until recently, for all member and nonmember countries for which it computed PSEs, OECD calculated PSEs for individual commodities, as well as an agricultural aggregate PSE. In 2007, however, OECD stopped calculating commodity-specific PSEs for all countries (members as well as nonmembers). A major reason was the difficulty in allocating input subsidies and decoupled support, such as direct income payments, among specific commodities for many countries. Yet, OECD continues to compute commodity-specific budget subsidies directly linked to production and commodity-specific market price support.

<sup>8</sup> Appendix Tables 2 and 3 also give annual producer NRAs and consumer tax equivalents calculated for all commodities for which OECD provides product-specific budget subsidies and market price support for the transition period.

This is largely because the exportable commodities are mainly crops, whose annual output is heavily affected by weather. The weather-induced fluctuation in production results in fluctuating domestic prices, which in turn causes the NRA to oscillate. Yet, Table 4 shows that during transition Russia has been a much larger agricultural importer than exporter. For example, over 2001-04, the average annual value of agro-food imports was \$10.4 billion, while exports were only \$1.9 billion.

The following subsections examine how assistance to agricultural producers has changed during transition, focusing on three types of support policies: (1) budget subsidies; (2) input pricing; and (3) border policies that can generate market price support. Special attention is paid to explaining the large fluctuations in assistance observed in Figures 3-5.

### *Budget subsidies*

During the transition period, budget subsidies to agricultural producers have fallen substantially (Figure 6, in which budget subsidies equal output, input, and other subsidies). For scale reasons, figure 6 does not include any year of the planned period. In 1990, however, budget transfers to producers equaled about 30 billion Euros (computed using the Soviet official exchange rate, and for the 81 percent share of agricultural output covered by OECD's PSEs for Russia), which dropped in 1992 to 3.2 billion Euros.<sup>9</sup> After this huge decline, the subsidies rose a bit in the mid-1990s, but then fell again in the last years of the decade, largely because of the economic crisis of 1998. From 2000 to 2005, budget subsidies rose only slightly in Euro values. OECD-calculated budget transfers to Russian producers in 2005 equaled only 1.8 billion Euros (OECD PSE database for Russia). The bulk of the transfers have continued to be input subsidies, which accounted for three-quarters of total budget subsidies in the early 2000s.

Budget transfers plunged during the transition period not because of the desire of the agricultural and political establishments to reduce them and downsize the sector, but rather because of the shortage of federal funding during transition. As federal budget subsidies to

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<sup>9</sup> As discussed earlier, the Soviet official exchange rate highly overvalued the ruble, which inflates the Euro-denominated value of subsidies in 1990. Yet, even if the exchange rate estimated by Cook et al. for 1986 (1.9 rubles to the dollar versus the official rate of 0.6 rubles/dollar) is used to convert to foreign currency values, budget subsidies in the planned period were much higher than in the early transition years.

agriculture fell, the regional (oblast) governments had the option to substitute their own subsidies. By 2005, 76 percent of all budget transfers to agriculture came from regional and local governments (OECD includes these subsidies in its PSE estimates, which means our NRA calculations also capture them). However, some of the regional support to agriculture indirectly comes from the federal government, through the latter's subsidies to regional budgets.

As direct budget subsidies to agriculture declined during transition, the government began to subsidize farms through a policy of soft loans from state or parastatal lenders, with periodic debt write-offs. In computing PSEs, OECD includes these soft loans and debt forgiveness in its budget transfers, under the category of input subsidies. OECD allocates the debt write-off in a given year by treating the relevant loans in each preceding year as a budget transfer for that year.

### ***Input pricing***

As discussed earlier, price and trade liberalization quickly reduced the large subsidy that agricultural producers and consumers received from the pricing policies for inputs during the planned period. For example, in 1990 Russian farms had to produce 38 tons of grain to purchase a tractor, while in 2003 they had to produce 186 tons. Likewise, a ton of diesel fuel cost farms 0.4 tons of grain in 1990, compared to 3.5 tons in 2003 (Rosstat 1998 and 2004).

At various times in the transition period, farm purchase prices for fertilizer, fuel, and other energy have been below world, and specifically Russia's export, prices for these products, resulting in some continuation of this type of subsidy from the Soviet period. This, for example, was generally the case in 1999-2000 (Liefert 2005). By 2003, however, this form of subsidy appeared to have diminished substantially. For most oil products, Russian farms were in fact paying prices above those at which the country exported, the difference being taxes assessed on the domestic purchases.<sup>10</sup> The one exception is that throughout the transition period, natural gas has been sold to farms (as well as all other domestic users) at prices far below the gas' export price. In 2003, for example, the domestic price for natural gas was only about a quarter of the

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<sup>10</sup> This conclusion is based on comparison of farm purchase prices for inputs from Rosstat (2004) and export unit values for the inputs computed from the Russian Federation State Customs Committee (various years).



export price. Although natural gas is not a major input in agricultural production, it is a key input in producing fertilizer. With the surge in world oil prices in the mid-2000s, Russian farms returned to the situation of paying prices for fuel below world prices.

Neither the change in budget subsidies nor the decline in implicit subsidies that resulted from price liberalization can explain the severe fluctuation in producers' NRAs during transition. The budget subsidy levels did not fluctuate much (after the big initial drop), and the subsidies from input price policy are not captured by the NRAs calculated from OECD's Russian PSE database. (Like the PSEs computed by Cook et al. for the USSR, OECD's PSEs for Russia include input subsidies that take the form of government budget subsidies, but not implicit support from input pricing.) The explanation therefore appears to lie in calculated market price support.

### ***Border measures and market price support***

In 1990, market price support (MPS) for Russian producers was about 70 billion Euros (as computed by OECD for those commodities for which it calculates MPS), and in 1992 it fell to negative 17 billion Euros (Figure 6). As discussed earlier, OECD uses the overvalued Soviet official exchange rate in computing PSEs for the planned period, which results in a high MPS estimate. That point notwithstanding, one can conclude that reform substantially reversed Russian MPS. Figure 6 shows that MPS as conventionally computed then continued to fluctuate throughout the transition period. Figure 7 also supports this conclusion. The percentage price gap in that figure is computed as the domestic value of agricultural production in producer prices ( $V^d$ ) minus the value of production measured in border prices ( $V^b$ ), divided by the value of production in border prices; that is, percentage price gap =  $100 * (V^d - V^b) / V^b$ .<sup>11</sup> The percentage price gap moves considerably over the transition period, although the fluctuations are in multi-years cycles, not annual oscillations up and down.

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<sup>11</sup> The percentage price gap is equivalent to the nominal rate of protection for total agriculture. The numerator of the percentage price gap also equals MPS as conventionally calculated, with one qualification. In computing MPS for livestock products, OECD includes a feed adjustment coefficient that captures the difference between domestic and border prices for animal feed. For example, if Russia supports its feed producers such that domestic feed prices are

As mentioned earlier, Table 4 shows that during transition Russia has been mainly an agricultural importer. Tariffs have been the main border measure, the main exception being tariff rate quotas created for meat imports in 2003 (discussed later in greater detail). Figure 7 reveals that since 1994, the average (trade-weighted) tariff on agro-food imports has been fairly steady, ranging between 10 and 14 percent. The figure shows that import tariffs cannot explain the magnitude or fluctuation of the observed price gaps. Likewise, no other conventional border measures existed that could account for the price gaps and their movement.

One possible cause of the price gaps is market interventions by regional authorities. As discussed earlier, as federal budget subsidies to agriculture fell during the early years of transition, regional governments became the main source of budget subsidies. With control of the purse strings, regional governments became active in setting agricultural policy within their jurisdiction, such that policies became fragmented between regions. The “policies,” however, tended to be ad hoc and nontransparent. One common regional policy during transition has been fixing price margins between the wholesale and retail level, mainly for food staples such as bread and milk. Another common policy, especially for grain, has been restricting product outflows. One motive for this policy appears to be concern for local food security during poor harvests. A less benign motive might be that local officials wish to profit from the price arbitrage opportunities that the flow restrictions create between regions. By affecting prices within regions, these policies can affect the price gap (market price support) for commodities.

Another cause of the price gaps, and especially their fluctuation, does not involve agricultural policies – the interaction of poor market infrastructure for agriculture and movement in Russia's exchange rate.

### ***Poor infrastructure, the exchange rate, and transmission***

When Russia began its economic transition, it inherited from the Soviet Union a deficient system of physical infrastructure for agriculture, while the commercial and institutional infrastructure that the new market-oriented agro-food economy needed was virtually nonexistent. Poor physical

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above border prices, the feed adjustment coefficient measures the tax on livestock producers that occurs because they have to pay higher prices for feed.

infrastructure involved deficiencies such as weak transportation and storage, while the needed commercial and institutional infrastructure involved systems of market information, credit, and commercial law (among others). Building the latter from scratch has been one of the country's main challenges in its agricultural reform. Wehrheim et al. (2000) concludes that weak commercial and institutional infrastructure is the main problem facing the Russian agro-food system.

Poor infrastructure can have two main effects. The first is that it can result in high internal transport/transaction (TT) costs. High TT costs, however, do not explain the fluctuation in Russia's producer NRAs, one reason being that these costs should not change much in the short run. Also, in computing the market price support part of PSEs for Russia (which we also use in calculating our producer NRAs), OECD subtracts out these costs, making some assumptions in doing so. If the adjustment is done sufficiently well, TT costs should not explain much of the remaining gap between domestic and border prices.

The second effect of poor infrastructure is that it can create the market imperfection of incomplete information (Fackler and Goodwin 2001, Barrett 2001, Barrett and Li 2002). In particular, producers in isolated areas might be unaware of prices (and especially price movements) outside of their region. More specifically, incomplete information can reduce the transmission of changes in border prices to domestic prices. Weak market infrastructure can also create localized market power by processors and distributors and hold-up problems, such as delayed payments to farms which reduce prices (especially when inflation is high -- Gow and Swinnen 1998). All these problems can result in gaps between domestic and border prices that cannot be explained by either high TT costs or market intervention policies.

During the transition, Russia's exchange rate has fluctuated considerably (Figure 8).<sup>12</sup> In 1992, the first year of transition, both the nominal and real exchange rate depreciated substantially, as the overvaluation of the Soviet ruble during the planned period was (over)corrected. From 1993 to 1997, the ruble appreciated in real terms. Real appreciation occurred largely because the inflation rate exceeded the ruble's nominal depreciation rate, thereby correcting the ruble's undervaluation from the exchange rate plunge of 1992. In 1998-99,

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<sup>12</sup> The exchange rate is measured in U.S. dollars per ruble. Thus, in the figure a rise in its value shows real appreciation of the ruble, and a fall real depreciation.

the ruble again depreciated strongly in real terms, as a result of Russia's economic crisis that hit in August 1998. The cycle continued with the ruble appreciating in real terms during the 2000s.

Figure 8 also compares the movement in the ruble's real exchange rate (RER) during transition with the fluctuation in the aggregate nominal assistance coefficient (NAC) for agricultural producers. The NAC for a commodity equals the sum of the domestic price plus per unit budget transfers, divided by the border price. The NAC differs from the NRA in that it does not subtract out the border price from the numerator. This means that NAC values cannot be negative. A value greater than 1 now indicates assistance for producers, while a value less than 1 indicates taxation. The fact that NACs cannot be negative means that comparing changes between the RER and NAC values is easier than between the RER and NRA values.

A strong correlation appears to exist between changes in the RER and producer NAC values. This correlation could be explained by changes in the RER being only partially transmitted to domestic producer prices. The main element (in value terms) in the NAC for most Russian commodities is the ratio of the domestic to border price, the latter being the trade price in foreign currency converted to domestic currency via the exchange rate. If there were no transmission of the change in the exchange rate to domestic prices, the RER and NAC would change by the same percentage (*ceteris paribus*). This apparently came close to occurring in 1992. If there were complete transmission of the change in the RER to domestic prices, the NAC would not change in response to movement in the RER (because both the numerator and denominator of the NAC would change by the same percentage). What appears to have happened is that changes in the RER have been partially transmitted to domestic prices, such that the RER and domestic producer prices move in tandem, but with prices changing by a smaller percentage than the RER.

A qualification to the above arguments is that because the producer NAC contains budget transfers in the numerator, their existence would result in the NRAs changing by a smaller percentage than the RER (because the transfers would not change in response to change in the RER). Figure 8, however, also contains the nominal protection coefficient (NPC) for producers. The NPC is the pure ratio of the domestic to border price (unlike the NAC, it contains no budget subsidies). The correlation between change in the RER and NPC is as strong as that between the

RER and NAC. This shows that transmission from the RER to domestic prices has been far from complete.

The policies and behaviors of regional and local governments could account for some of the incomplete transmission, less so Russian federal policies.<sup>13</sup> We mentioned earlier the conclusion by Wehrheim et al. (2000) that weak commercial and institutional infrastructure is the main problem facing the Russian agro-food economy. This supports the argument that poor infrastructure could be the dominant cause of the incomplete transmission, at least during the 1990s. To some extent, policies and institutional infrastructure are interrelated. For example, is corrupt behavior by officials that affects markets "policy", or is it weak governance and institutions?

Harley (1996), Liefert et al. (1996), the OECD country studies on Russian and Ukrainian agriculture (OECD 1998, World Bank and OECD 2004), Shick (2002), Melyukhina (2003), and OECD (2007) discuss how the relationship between the exchange rate, market infrastructure, and transmission can affect the calculation and interpretation of support for Russia and other transition economies. Harley (1996) argues that the effects of poor infrastructure could be viewed as a measure not of policy support or taxation, but rather of "policy failure". Liefert et al. (1996) argues that the effects can be viewed as part of countries' "systemic legacy" from the Soviet period. In computing PSEs for Russia and other transition economies, the OECD acknowledges that deficient infrastructure which impedes transmission is a cause of some of the estimated "market price support" part of the PSEs.

Russian regional and local agricultural policies that affect markets are largely ad hoc and nontransparent. Eliminating these policy interventions would require fundamental reform of Russia's political system, including a transformation of attitudes and behaviors involving governance. No overnight policy changes, including any changes that could result from Russia's

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<sup>13</sup> Figure 8 shows that in 1992 very little of the change in the real exchange rate was transmitted to domestic agricultural prices. Although poor infrastructure hindering transmission could account for part of the incomplete transmission in that year, policy also played a key role. The negative NRA for 1992 shows that domestic prices were below border prices, such that there were incentives to export. Yet, export taxes as high as 70 percent existed for most agricultural products, and other export restrictions also existed, such as quotas, licenses, and complete bans (OECD 1998, p. 123-124). In its trade policy, Russia was still behaving like a planned rather than a market economy, where the emphasis was on keeping product within the country for domestic consumption rather than trying to sell abroad. These export controls, however, did not long survive the transition process, and by the mid 1990s had largely disappeared.

accession to the World Trade Organization, would have much effect on regional policy interventions in the short to medium term. Also, the incomplete transmission is not mainly the result of federal agriculture-targeted policies. Most of the incomplete transmission effect therefore involves behaviors and conditions that, at least in the short run, lay beyond the influence of Russian federal policymakers.

An important relationship exists between incomplete transmission (whatever its cause), conventional measures of protection and support, and a country's domestic prices. If the border price for a commodity (or more specifically, the world price or exchange rate) changes, and there is incomplete transmission of the change to the domestic producer price, then standard measures of protection/support will usually move in the opposite direction than will the producer price. This relationship has strong implications for interpreting a change in assistance. For most trade and support policies, such as import tariffs and quotas and budget subsidies, a positive relationship exists between the measured support generated by the policies on the one hand, and the producer price, producer welfare, and incentives to produce on the other. For example, if the tariff for a commodity rises, both measured support (the price gap, or market price support) and the domestic producer price will also rise, such that producers are better off and have incentive to increase production.

Assume, however, that price gaps result mainly from incomplete transmission of changes in border prices to domestic prices. In this situation, the expected positive relationship between protection/support and domestic prices usually will not hold, rather the relationship will be negative.<sup>14</sup> This in turn means that changes in assistance will be inversely related to changes in both incentives to produce and producer welfare.

The following example demonstrates this relationship. Assume that the border and domestic producer prices for a commodity initially are identical, such that the nominal protection coefficient (NPC) equals 1. The border price then rises. If there is some transmission between the border and domestic price, the latter will also increase. If the transmission is incomplete,

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<sup>14</sup> The negative relationship between changes in support and producer prices with incomplete transmission is most easily proven analytically if support is measured by the nominal protection coefficient (because it includes no budget subsidies). The negative relationship will hold if the price transmission elasticity between the border and domestic price lay between 0 and 1. If the elasticity is either less than 0 or greater than 1, a positive relationship will

however, the border price will rise by more than the domestic price. With the producer price now below the border price, the NPC drops to less than 1. Incomplete transmission has resulted in the NPC and producer price moving in opposite directions.

The incomplete transmission results in the domestic price changing by a smaller percentage than the border price. The domestic price and support measure move in opposite directions because the incomplete transmission has a mitigating effect on the move in the domestic price. (For further analytical discussion of this relationship, see Liefert and Persaud 2008).

This relationship appears to have held during Russia's transition. Beginning in 1993, high domestic inflation exceeded the nominal depreciation of the exchange rate. This meant that the ruble appreciated in real terms. By raising the prices of nontradables relative to tradables, the inflation reduced real domestic prices for tradable agricultural products. In Figure 8, the real producer prices curve gives the real aggregate price for agricultural goods (indexed for convenience to the value of 2 in 1992). The figure shows a major decline in real prices during 1993-94. The price drop contributed to the large decline in agricultural output during the early transition years.

The change in the real exchange rate, however, was incompletely transmitted to domestic prices. This meant that real domestic prices rose relative to border prices (or in other words, incomplete transmission meant that producer prices followed domestic inflation to some degree rather than just border prices). The gap resulted in measured "support" increasing, despite the fact that real producer prices were dropping. The support ensued because incomplete transmission entailed real prices not falling by as much as border prices, thereby creating a price gap. Although inflation eroded real producer prices, incomplete transmission resulted in rising producer NRA values, such that calculated assistance became positive in 1994-97 (Figure 8).

During Russia's crisis years of 1998-1999, however, Russian support measures fell, but real producer prices rose. Although inflation was high during these crisis years, the severe depreciation of the ruble raised nominal agricultural producer prices by more than the inflation rate. Thus, real producer prices increased (Figure 8), which motivated more production. (The

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exist between a change in the nominal protection coefficient and producer price. These relationships hold whether one uses nominal or real values for the border and domestic prices.

major depreciation of the ruble during the crisis is considered one of the main reasons why the overall Russian economy has grown at a fairly high rate during the 2000s.) Yet, the depreciation of the exchange rate was incompletely transmitted to domestic prices. This meant that border prices rose by a greater percentage than domestic prices, which in turn moved measures of agricultural protection and support in a negative direction. This is shown in Figure 8 by the drop in both the nominal assistance and nominal protection coefficients. Measures of protection/support and real prices again moved in opposite directions.

During the early 2000s, measures of support rose again, but real producer prices fell. Annual domestic inflation was 10-20 percent, which reduced agricultural real producer prices. The inflation also appreciated the ruble in real terms, given that the nominal exchange rate was fairly stable. Measures of support increased moderately, indicating incomplete transmission between border and domestic prices (that is, domestic prices still followed domestic inflation to some degree rather than being wholly determined by border prices). Once again, measures of support and real prices moved in opposite directions.<sup>15</sup>

This discussion shows that for Russia during transition, support measures have been misleading indicators of the direction of change in incentives to produce and producer welfare. The possible negative relationship between measures of protection and support and domestic producer prices requires that changes in these measures be interpreted carefully.

### ***Decomposing changes in agricultural producer prices***

Liefert (2007) has developed a method for decomposing changes in agricultural producer prices within countries. The method allows one to measure the degree to which changes in all of the following affect prices, and thereby producer incentives: (1) world prices; (2) the exchange rate, which represents macroeconomic policy; (3) transparent commodity-specific trade policy (such as import tariffs); and (4) incomplete transmission caused by either nontransparent policies or poor market infrastructure. We use this method to examine changes in Russian producer prices

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<sup>15</sup> If we added to Figure 8 the aggregate annual percent PSEs for Russian agriculture for the 1990s as computed by OECD, we again would get a generally negative relationship between the change in the percent PSE and real producer prices.



during transition.

Let  $P^d$  be a commodity's domestic producer price,  $P^w$  the world price in foreign currency,  $E$  the exchange rate, and  $t$  an import/export tax. If domestic transport/transaction costs have been subtracted out, markets within the country work well, and no market-distorting policies exist,  $P^d = P^w * E$ . Any deviation of  $P^d$  from this value could be considered a distortion. If a trade tax exists,  $P^d = P^w * E * (1 + t)$ , where the right side term is called the tariff-included *landed price*. The decomposition method measures the degree to which a change in  $P^d$  can be attributed to changes in the three right-side variables.

Table 5 gives decomposition results for various commodities. The periods over which the decomposition calculations are made were chosen mainly to coincide with movement in the exchange rate: (1) major appreciation of the ruble over 1994-97; (2) severe depreciation in 1998-99; and (3) little change over 2001-02/03, to provide examples in a more tranquil time. Before examining the general results, we will demonstrate the decomposition procedure, using the results for wheat over 1994-97. Columns 1, 2, and 4 present the change in the real world price (in foreign currency), real exchange rate, and real producer price for each commodity over the period. Given that the exchange rate is expressed as rubles per dollar, the 56 percent fall in the rate over 1994-97 shows that the ruble appreciated substantially in real terms. Column 3 gives the price transmission elasticity between the change in the commodity's landed price [ $P^w * E (1 + t)$ ] and its domestic producer price, in this example a very low 6 percent.<sup>16</sup>

Columns 5 and 6 are based on the assumption that transmission between the landed and domestic price is complete (the transmission elasticity equals 1). Based on this assumption, the direct price effect measures the contribution that the changes in  $P^w$  and  $E$  make to the change in  $P^d$ . In the wheat example,  $\Delta P^w$  and  $\Delta E$  result in  $P^d$  falling by 39 percent. The tariff effect measures the effect on  $P^d$  of a change in the tariff, as well as the implicit effect of the tariff on  $P^d$  that results from changes in  $P^w$  and  $E$  interacting with the existing tariff. In this example, the total tariff effect is to increase  $P^d$  by 2 percent. Column 7 measures the sum of the direct price and tariff effects. It shows that if transmission between the landed price and  $P^d$  were complete, the

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<sup>16</sup> The price transmission elasticities identified in Table 5 are not econometrically estimated. Rather, the values are computed as simply the ratio of the percent change in the domestic producer price to the percent change in the landed price for each commodity over the specific period of calculation. The elasticities are thereby "implicit" in the price changes over the period in question.

combined and interactive changes in  $P^w$ ,  $E$ , and  $t$  would decrease  $P^d$  by 37 percent.

Column 8 measures the incomplete transmission effect on  $P^d$ . In the wheat example,  $P^d$  would fall by 37 percent with complete transmission, but because of incomplete transmission, the drop is only 2 percent. The incomplete transmission prevents the other 35 percent potential decline from occurring, which means the incomplete transmission effect is +35 percent. The net effect in column 9 is the sum of the combined and incomplete transmission effects, and gives the actual change in  $P^d$ . Using again the example of wheat over 1994-97, the appendix provides a deeper examination of the decomposition method and results.

Table 5 shows that the real exchange rate moved much more strongly during the 1990s than world prices (though changes in the latter were also nontrivial), such that the exchange rate was the dominant variable driving changes in domestic producer prices. The tariff effects are not large, which reflects the general stability of agricultural tariff rates from the beginning of transition through the early 2000s. Most of the tariff effect comes from changes in world prices and the exchange rate interacting with existing tariff rates, rather than from changes in the rates themselves. The incomplete transmission effects, on the other hand, are very big. In many cases, less than half of the potential change in the producer price occurs because of incomplete transmission, and in a number of cases the transmission is negative, with landed prices and producer prices moving in opposite directions.

### ***Producer assistance in the 2000s***

The preceding discussion of assistance and price gaps for agricultural producers focused on the main trends since transition. The following discussion examines assistance in the more recent period since 2000, with more attention on specific commodities. Although changes in border prices (especially the exchange rate) combined with incomplete transmission likely accounts for some of the price gaps and measured assistance during the 2000s, our discussion will focus on the effects of agriculture-targeted policies.

Table 2 shows that since 2000, aggregate assistance to producers has been positive to a nontrivial degree, with the aggregate annual NRA between about 15 and 25 percent. Table 3 shows, however, that the aggregate NRA masks considerable differences in support/taxation

between commodities. In the 2000s, livestock products (meat and milk) and sugar have been heavily assisted, while grain and sunflowerseed, Russia's dominantly produced and traded oilseed, have been generally taxed.

Of Russia's major agricultural commodities, sunflowerseed has been the most consistent net export during the transition period (Table 4). In 2000, Russia imposed a 20 percent export tax on the commodity. The tax can explain the negative NRA in 2002-03 of 22 percent, though not the NRA values for 2001, 2004, and 2005 of 2, 9, and -2 percent, respectively.

During the 2000s, grain is also generally taxed, especially in 2002-03, with the aggregate grain NRA in 2002 being negative 29 percent. One reason for the negative values involves the interaction of weather and infrastructure. Both 2001 and 2002 were good weather years, resulting in big grain harvests. Although this resulted in large exports, mainly through Black Sea ports, the infrastructure (including port export capacity) had difficulty handling the movement of so much production. Better infrastructure would probably have allowed higher exports. The surplus product drove domestic prices down (though with some lag). The ensuing drop in prices resulted in "taxation" vis-à-vis border prices, even after adjusting for domestic transport and transaction costs.

Livestock production in the 2000s, and especially meat, has been heavily assisted (with the exception of eggs). One reason is that since grain and sunflowerseed are used to produce animal feed for livestock production, the taxation of the former that results from domestic prices being below border prices results in a subsidy for the latter. In computing market price support for livestock products, the OECD incorporates this subsidy, which means that we also incorporate it into our NRA calculations.

Table 4 shows that in the 2000s (as well as most of the transition period), Russia has been a large net importer of livestock products, especially meat. In 2003, the Russian government created restrictive tariff rate quotas (TRQs) for imports of beef and pork and a pure quota for poultry. The annual quota for poultry was set at 1.05 million metric tons (mt), and the low tariff quota for beef and pork at 0.447 and 0.45 mt, respectively. In comparison, 2002 poultry, beef, and pork imports equaled 1.37, 0.50, and 0.60 million tons, respectively (according to USDA data). The low in-quota tariff for beef and pork was kept at the previous tariff rate of 15 percent, while the out of-quota tariffs were set at 60 and 80 percent, respectively. The tariff for the quota

poultry imports was maintained at the existing 25 percent level. In 2005-06, the government liberalized the meat import policy moderately, mainly by converting the pure quota for poultry to a TRQ. Also, for all three meats, the low tariff quota was to rise gradually from 2006 to 2009, and the out-of-quota tariff to fall gradually.

Although the meat import TRQs (and poultry pure quota) created in 2003 contributed strongly to market price support, the assistance rates for meat were high in preceding years as well. One explanation specific to poultry is that in 2001 the Russian government began to restrict imports from the United States, the dominant foreign supplier, on sanitary grounds. This helps explain the big jump in the poultry NRA from 51 percent in 2000 to 110 percent in 2001, which helped drive up the calculated NRA for total meat (Figure 4 and Appendix Table 2).

Another product which has been highly supported since the late 1990s is sugar. Russia's sugar trade policy has been complicated, involving different import rates depending on the exporting country, and a tariff-free import quota from Ukraine from 1997 to 2004 (OECD 1999, p.183). The policy's overall effect in the 2000s, though, has been strong support.

### ***Indirect assistance for producers and the relative rate of assistance***

We next examine indirect assistance/taxation for agricultural producers during the transition period that results from tariffs for other imported goods. Import tariffs for nonagricultural tradables hurt agricultural producers by raising domestic prices for the tariffed goods, which in turn bids up prices for inputs used by both agricultural and nonagricultural products. But, more importantly, they bid up and attract mobile resources out of the agricultural sector, so reducing rewards from farming.

The bottom rows of Table 2 give information needed to compute the relative rate of assistance for agricultural producers during the transition years, and provide the values for Figure 9. The NRA for tradable non-agriculture (the row "All non-agriculture" in Table 2) is based on import tariffs for non-agricultural products. We use that trade-weighted average tariff as a proxy for the nominal rate of assistance to the tradable non-agricultural part of the economy (including

the processed food industry),<sup>17</sup> call it  $NRA_{nonag}^t$ . Together with the  $NRA_{ag}^t$  we are then able to calculate a Relative Rate of Assistance, RRA, defined as:

$$RRA = 100[(1+NRA_{ag}^t/100)/(1+NRA_{nonag}^t/100) - 1]$$

where  $NRA_{ag}^t$  and  $NRA_{nonag}^t$  are the average percentage NRAs for the tradables parts of the agricultural and non-agricultural sectors, respectively. Since the NRA cannot be less than -100 percent if producers are to earn anything, so too must the RRA. This measure is useful. If it is below zero, it provides an internationally comparable indication of the extent to which the policy regime has an anti-agricultural bias, and conversely when the RRA is positive. Given the steadiness of the NRA for tradable non-agriculture, the RRA follows the fluctuation in the NRA for tradable agriculture. During the first half of the 2000s, assistance to agriculture was somewhat higher than to the rest of the tradable economy, resulting in a moderate relative assistance rate of around 5-15 percent.

### *Assistance to consumers*

Recall that during the planned period, the final consumers of agro-food products were supported. Large subsidies to food processors allowed consumers to pay food retail prices below domestic production costs, as well as below border prices. During the early years of transition these subsidies were phased out, and by 2000 were nonexistent. Recall also that OECD's CSEs for Russian agriculture cover the effect from only farm level policies. However, given that consumer subsidies largely did not exist during the transition period, consumer tax equivalents (CTEs) computed from OECD's CSEs become a strong measure of assistance/taxation not just at the farm level, but also at the retail level.

For consumers, a positive CTE for a commodity indicates taxation (because the consumer price exceeds the border price), and a negative CTE support. Comparing Figure 10 with Figure 4 shows that the CTEs generally follow the producer NRAs, the main difference being that producers continued to receive budget subsidies to some degree during transition. Although

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<sup>17</sup> This would be an overstatement if exporting and non-trading parts of the non-agricultural sectors receive less support than the import-competing parts; but it is assumed that non-tariff import barriers are still in place and exactly offset this bias.

CTEs for most agricultural products were already negative in the planned period (see again Figure 1), the CTEs fell substantially with the beginning of reform in 1992, resulting in large support. The rise in the CTEs over 1993-97 led to moderate taxation (in the aggregate), the drop in 1998-99 (coinciding with Russia's economic crisis) eliminated the taxation, and the rebound in the CTEs in the 2000s resulted again in moderate aggregate taxation (see Appendix Table 3 for the detailed CTE calculations).

Although the aggregate CTE in 2005 was 8 percent, the CTEs for grain and sunflowerseed were negative, those for meat and sugar highly positive, and for milk slightly positive (although much higher in previous years). Negative grain and sunflowerseed producer NRAs and CTEs indicate that producers were taxed to the benefit of consumers, including livestock producers who used animal feed. Likewise, the positive meat, milk, and sugar producer NRAs and CTEs indicate that consumers of these products were taxed to the benefit of producers.

Given that direct consumer subsidies during transition have been almost nil, the CTEs are determined almost completely by the relationship between domestic and border prices. The main cause of change in assistance/taxation for consumers is therefore the same as for producers – fluctuation in the exchange rate combined with incomplete transmission to domestic prices.

### **Future policy direction and political economy analysis**

During most of the transition period, Russia's assistance policies for agriculture have not been extreme. Budget transfers have been low. The main border measure has been tariffs, which from the early 1990s to the early 2000s annually averaged 10-15 percent. The major exceptions to these moderate policies have been the special protectionist policy for sugar, the 20 percent export tax imposed on sunflowerseed in 2000, and the restrictive tariff rate quotas for imports of beef and pork, and pure quota for poultry, created in 2003 (recently also converted to a TRQ).

Russian budgetary support to agriculture fell during the initial transition years not because of the government's desire to reduce support, but rather because funding was tight.

Since 2000, however, government revenues have been rising substantially, for two reasons. The first is that GDP has grown at an average annual rate of 6-7 percent (PlanEcon). The second is that the bulk of Russia's export earnings come from energy (crude oil, oil products, natural gas), which have surged because of the rise in world energy prices in recent years.

Despite the government's improving financial condition, from 2000 to 2005 budget subsidies to agriculture increased only slightly (in Euro values). In 2005, however, the Russian government designated the following areas as National Priority Projects which would receive increased funding – health, education, housing, and agriculture. Although specific figures are not yet available, budgetary support to agriculture since 2005 has risen to reflect this priority status, and should continue to do so (Interfax). The government has also stated that the main goal of agricultural policy will be to revive the livestock sector. The government apparently wishes to reverse the large drop in production, and surge in imports, of livestock products that has occurred during transition.

Russia officially began its bid for accession to the World Trade Organization (WTO) in 1995 (to the GATT in 1993), and has concluded bilateral negotiations with almost all countries (including the United States and EU). How might accession constrain Russia's future agricultural policy? We examine the question with respect to the three main "pillars" of the Uruguay Round Agreement on Agriculture – market access, export subsidies, and domestic support. Russia's "current" negotiating positions with respect to export subsidies and domestic support as identified in this chapter are from the English-language website *Russia and WTO* ([www.wto.ru/russia.asp](http://www.wto.ru/russia.asp)), while the bargaining position concerning market access is from OECD (2002, p. 44).

Russia's existing behavior with respect to all three Uruguay Round pillars is relatively moderate (the main exception being its meat import tariff rate quotas). Thus, in all areas, Russia in its accession negotiations is asking for bound commitments above its current levels. The aggregate trade-weighted tariff for agro-food products in 2003 was 10 percent. In comparison, the average bound tariff on agricultural products for WTO members exceeds 60 percent (Whitley et al. 2001).<sup>18</sup> As of 2002, Russia was asking for an initial average bound tariff of 35 percent, to

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<sup>18</sup> This comparison overstates tariffs for WTO members relative to Russia's tariffs. The +60 percent figure for WTO members is a simple average of bound tariffs, while the Russian tariff figure of 10 percent is a trade-weighted

fall over six years to an average of 25 percent.<sup>19</sup> Although Russia has not used any agricultural export subsidies during the transition period, and many countries in the current Doha Round of trade negotiations want to ban such subsidies altogether, it is asking for annual bound export subsidies of \$0.7 billion. On domestic support, Russia is asking for annual bound support of \$9.5 billion, which compares to its 2004 actual support level of \$2.73 billion (Rosstat 2004, pp. 606).<sup>20</sup>

Although WTO members have resisted Russia's requests, with respect to tariffs and domestic support the final negotiated levels could lay somewhere between Russia's current behaviors and the bound levels it is requesting. If so, Russia's accession would not liberalize its agricultural policies (just as any reduction of countries' bound levels in the Doha Round that leaves these levels above current behaviors would not liberalize their trade). Russia would thereby have license to increase actual support and protection for agricultural producers. Yet, the negotiated bound levels would provide limits to future Russian support and protection.

We mentioned before that in the early 2000s Russia used health (sanitary) arguments to ban imports of U.S. poultry. By 2005, Russia was using sanitary arguments to ban meat imports on an ad hoc basis from many other countries as well (such as Canada, Brazil, France, Denmark, Poland, Romania, and Mongolia). This raises the concern that the country might be increasingly using sanitary issues as a protectionist pretext. Thus, the main benefit of Russia's accession to other WTO members might be that it would give them an official forum for challenging the country's sanitary and phytosanitary-based import restrictions.

We now examine political economy considerations behind Russian agricultural policy during the transition period. Before doing so, it would be helpful to reidentify the main types of producers: the former state and collective farms, family farms, and household plots.<sup>21</sup>

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average. The WTO member tariff calculation based on bound tariffs ignores products for which no tariff exists, while Russia's trade-weighted aggregate tariff covers all products, and assigns a tariff value of 0 for goods for which there is no tariff. An agricultural trade-weighted tariff computed for all WTO members would therefore be lower than the figure computed in Whitley et al. Nonetheless, the large disparity between the +60 and 10 percent figures indicates that agricultural tariffs in WTO members in the aggregate are high relative to Russia's tariffs.

<sup>19</sup> This is the latest publicly-available information we could find concerning Russia's bargaining position on agricultural import tariffs (OECD 2002, p. 44).

<sup>20</sup> Karlova (2005) examines the effects on Russian agriculture of various policy liberalization scenarios, some related to WTO accession.

<sup>21</sup> A fourth type of producer has arisen in the 2000s, the "new operators" (Rylko and Jolly 2005, Uzun 2005). These are large vertically integrated enterprises which combine primary production, processing, distribution, and



The transition process created fundamental problems for policymakers (both federal and regional) which had no simple solution. The main problem is that agriculture in the planned period overproduced relative both to the economy's real income and consumer purchasing power and to its comparative advantage vis-à-vis the world market. Correcting these imbalances would require shutting down unprofitable farms and in particular shedding unproductive labor. An aggressive policy along these lines, however, could create large-scale rural unemployment, especially given the limited opportunities for alternative employment in rural areas and impediments to labor mobility within the country (such as cities like Moscow establishing official hurdles to relocation). One could in fact argue that the main economic challenge of transition, not just for agriculture but economy-wide, has been reallocating labor from old to new viable employment, while avoiding serious unemployment.

The main policy response has been to minimize rural unemployment by shielding the large former state and collective farms from termination (though governmental bodies have had limited resources to pursue this policy). Given that most farms have been unprofitable during the transition period, the main discretionary policy used to avoid farm bankruptcies has been soft loans from state or parastatal lenders with periodic debt write-off. Labor has not been forced out of agriculture, but rather been given the choice of seeking alternate employment.<sup>22</sup> A secondary motive for preserving farms could be local food security, especially given the deficient market infrastructure that works to segment regional markets from each other.

Within this overall policy context, one can examine other more specific political economy motives behind policies. The analysis is based on the conclusion that Russia's restrictive meat import TRQ regime created in 2003, and the decision in 2005 to increase funding for agriculture, helping especially the livestock sector, show that support for agriculture in

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sometimes retail sale. They are not mutually exclusive from the former state and collective farms, in that an enterprise typically contains a number of these farms.

<sup>22</sup> Although workers in general have not been completely forced off of farms, Bogdanovskii (2005) finds that for many farms and their workers a compromise arrangement of limited detachment has been made. Millions of workers and their families have become subsistence producers, in that they no longer work on and receive wages from the farms, but are left to live off their household plots. The workers, however, still receive some benefits from their former employing farm, such as continued access to its social-welfare services (health, education, housing) and use of the farm as a conduit for inputs for plot use. Many of these subsistence farmers are elderly or past their prime working years. For the rest, such a grim life provides strong motivation to find an alternative. This is the apparent "solution" to Russia's problem of excess agricultural labor.

general, and the livestock sector in particular, is on the rise. One political economy hypothesis is that commodities which have low or declining comparative advantage receive support. Russia's agricultural trade patterns during transition, as well as work by Liefert (2002), indicate that Russia has a comparative advantage in producing grain and sunflowerseed, and a comparative disadvantage in livestock products and sugar. Yet, NRAs for the 2000s show that policy and market conditions combine to tax the former and assist the latter. Specific border measures have taxed sunflowerseed (export tax) and supported meat (import TRQs) and sugar (a complex policy involving varying tariff rates). The government's announcement that additional funding for agriculture will favor the livestock sector is further evidence that Russia is more interested in reviving this sector than in capitalizing on its potential as a bulk crop exporter.

Another political economy hypothesis is that agriculture will be supported the more farm incomes fall relative to the rest of the economy. In 1990, average monthly earnings by agricultural workers equaled 95 percent of economy-wide earnings, but by 2003 the figure had dropped to 39 percent (Rosstat 2004, p. 180). The assistance-increasing budget and border policies of the 2000s support this hypothesis.

The two preceding hypotheses concern the "neediness" of agriculture for special assistance, and are consistent with the neediness policy of supporting agriculture to avoid major rural unemployment. The following two hypotheses involve the cost of support. The first is that as agriculture's share in GDP and employment falls, support rises. This is because with fewer farmers to support, assistance becomes more affordable. During transition, agriculture's share in GDP has fallen substantially, from about 13 percent in 1990 to 4.6 percent in 2003 (see Table 1). Agricultural employment has fallen less, from 13 percent in 1990 to 11 percent in 2003. The larger drop in GDP compared to employment shows that labor productivity in agriculture has declined relative to the rest of the economy, with negative consequences for farm profitability. Thus, the evidence does not support the hypothesis that falling farm employment is motivating more support by making it more affordable. Rather, falling labor productivity raises the specter of unemployment, which buttresses the neediness argument for farm support.

The second cost-related hypothesis is that an inverse relationship exists between the share of food in consumer expenditure and support to agricultural producers. The smaller the share, the less that support policies which affect prices will tax consumers. From 1990 to 1999, the share of

home food consumption in expenditure rose from 32 to 52 percent. By 2004, however, the share had dropped back to 36 percent (reflecting mainly growth in consumer income -- Rosstat 2005, p. 226). The government's decision in the 2000s to increase border protection and budget transfers for livestock producers is therefore consistent with this hypothesis. Russia appears to be following the path of many other countries in that as agricultural commodities become "import-challenged," the economy's ability to afford agricultural subsidies rises, and consumers feel less of the tax they pay for support to producers, assistance increases.

Russian officials might be tempted to use the increased funding to agriculture to expand production, defend existing farms from liquidation, and protect current levels of employment. Pursuing such goals would largely freeze the structure of resource use in agriculture, but not necessarily motivate the changes in farm management and resource use to raise productivity. An alternative goal would be to use funding to promote productivity growth, which would improve Russian farms' ability to compete with imports, or to export on to global markets.

Productivity growth, especially of the labor-saving type, would require the continued exit of unskilled labor from farms, and the termination of chronically unprofitable farms. To mitigate the ensuing social costs, the Russian government could adopt the following policies. First, it could speed-up the transfer of responsibility for providing social-welfare services for workers — health, education, housing, recreation — from the large farms to local governments. This would mean that workers who leave farms would not immediately lose access to these necessary services (as well as relieve the farms of this financial burden). Second, subsistence farmers who work only their household plots could be given the legal status of “economically employed,” which would give them the rights to pensions, medical insurance, unemployment benefits, and other forms of social protection. Third, to increase rural employment opportunities, the government could promote the growth of small businesses through credit facilities, tax breaks, and simplified administrative requirements for creating small businesses. Fourth, governmental bodies throughout the country could remove whatever official impediments exist to labor mobility.

Although many farms continue to have a surplus of older and unskilled workers, many also suffer from a shortage of skilled workers (Liefert et al. 2005). A disproportionate share of the labor migration out of agriculture during the transition period has come from younger and

better-educated workers. Increased funding for agriculture could be used to attract and train workers in such deficit skills as machinery use and repair, animal care (including knowledge of modern breeding and feeding practices and veterinary care), and low to middle-level management activities. Such policies could increase productivity by substituting human capital for unskilled labor.

A last policy-relevant observation is that much of this paper has focused on the argument that a major cause of price gaps in Russian agriculture has been the incomplete transmission of changes in border prices, and especially the exchange rate, to domestic producer prices, and where the incomplete transmission is not caused mainly by agriculture-targeted policies, but rather by weak infrastructure. State investment in improving infrastructure, both hard (physical) and soft (institutional), would reduce high transport and transaction costs, and also improve transmission between border and domestic prices. Improving infrastructure takes time, effort, and expense. In the long run, however, strengthening macroeconomic stability and improving domestic infrastructure might do as much or more to reduce price gaps and their distorting effects as would liberalizing agriculture and trade policies.

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**Table 1: Importance of the agro-food sector in Russia's economy, 1990 and 2003**  
(percent)

	<b>1990</b>	<b>2003</b>
<hr/>		
GDP		
Primary agriculture	13.2	4.6
Food processing <sup>1</sup>	na	2.8
Employment		
Primary agriculture	13.2	11.0
Food processing	2.1	2.3
Trade <sup>2</sup>		
Exports	2.1	2.1
Imports	20.3	21.6
<hr/>		

<sup>1</sup>Figure for 2003 is based on assumption that the share of the food processing industry in the value of total industrial output and in value added by all industry are equal.

<sup>2</sup>Figures give the share of primary agriculture plus food processing industry in total exports and imports.

Source: Goskomstat/Rosstat and Russian Customs Committee.



**Table 2: Nominal and relative rates of assistance for agricultural producers, Russia, 1992 to 2005**  
(percent)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Covered products <sup>1,2</sup>	-48	-27	-8	14	23	38	19	-3	0	13	16	11	22	17
Non-covered products	-48	-27	-8	14	23	38	19	-3	0	13	16	11	22	17
All agricultural products <sup>2</sup>	-48	-27	-8	14	23	38	19	-3	0	13	16	11	22	17
Non-product specific input assistance(NPS)	4	7	16	10	6	3	7	4	3	4	3	3	3	3
<b>Total agriculture, including NPS<sup>2,3</sup></b>	<b>-45</b>	<b>-20</b>	<b>9</b>	<b>24</b>	<b>29</b>	<b>42</b>	<b>26</b>	<b>1</b>	<b>3</b>	<b>17</b>	<b>19</b>	<b>14</b>	<b>25</b>	<b>20</b>
Importables <sup>2,3</sup>	-48	-27	-7	19	25	44	22	-2	2	27	43	23	32	26
Exportables <sup>2,3</sup>	-50	-26	-11	-24	-22	-6	-30	-10	-22	-14	-29	-16	0	-4
<b>Tradables</b>														
All agriculture <sup>2,3</sup>	-45	-20	9	24	29	42	26	1	3	17	19	14	25	20
All non-agriculture	2	8	9	9	10	12	12	12	12	9	9	9	9	9
<b>RRA<sup>4</sup></b>	<b>-46</b>	<b>-25</b>	<b>-1</b>	<b>14</b>	<b>17</b>	<b>27</b>	<b>13</b>	<b>-10</b>	<b>-7</b>	<b>7</b>	<b>9</b>	<b>4</b>	<b>15</b>	<b>10</b>

<sup>1</sup> Products for which individual NRAs are computed.

<sup>2</sup> NRA including product-specific input subsidies.

<sup>3</sup> NRA including other (decoupled and non-product-specific) subsidies.

<sup>4</sup> The RRA is defined as  $100 * [(100 + \text{NRA}_{\text{ag}}) / (100 + \text{NRA}_{\text{nonag}}) - 100]$ , where  $\text{NRA}_{\text{ag}}$  and  $\text{NRA}_{\text{nonag}}$  are the average percentage NRAs for the tradables part of the agricultural and non-agricultural sectors, respectively.

Source: Calculated by authors from data from OECD and own calculations.

**Table 3: Nominal rates of assistance for agricultural producers, by commodity, Russia, 1992 to 2005**  
(percent)

Commodity	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
<b>Importables</b>														
Pork	-70	-11	20	32	27	46	46	39	3	46	59	31	42	72
Beef	-73	-50	-42	-30	-8	51	0	-19	18	48	72	47	20	15
Poultry	-57	-9	27	49	55	71	31	12	51	110	73	46	79	114
Milk	-55	-29	-3	63	63	79	52	24	11	9	40	43	40	10
White sugar	16	96	65	63	93	105	88	7	22	42	71	85	98	64
Corn	-34	-3	95	47	62	43	12	-14	9	35	-19	-14	-24	-29
<b>Mixed Trade Status</b>														
Eggs	-64	-38	10	50	31	46	29	6	-17	-1	-8	-32	5	7
Sunflowerseed	-40	-51	-17	-6	-22	-26	-30	-33	-34	2	-22	-22	9	-2
Rye	-25	-29	1	25	38	27	-12	-23	30	-8	-44	-41	11	-5
Oats	-32	-28	-12	-16	28	16	-5	-33	-7	-38	-66	-57	-29	-21
Barley	6	-14	-12	-37	-2	0	-10	-41	-16	-17	-25	-22	-12	-4
Wheat	-46	-20	-11	-11	5	7	-21	-28	-21	-10	-21	-8	3	-5
<b>Importables</b>	<b>-48</b>	<b>-27</b>	<b>-7</b>	<b>19</b>	<b>25</b>	<b>44</b>	<b>22</b>	<b>-2</b>	<b>2</b>	<b>27</b>	<b>43</b>	<b>23</b>	<b>32</b>	<b>26</b>
<b>Exportables</b>	<b>-50</b>	<b>-26</b>	<b>-11</b>	<b>-24</b>	<b>-22</b>	<b>-6</b>	<b>-30</b>	<b>-10</b>	<b>-22</b>	<b>-14</b>	<b>-29</b>	<b>-16</b>	<b>0</b>	<b>-4</b>
<b>Weighted Average of above</b>	<b>-48</b>	<b>-27</b>	<b>-8</b>	<b>14</b>	<b>23</b>	<b>38</b>	<b>19</b>	<b>-3</b>	<b>0</b>	<b>13</b>	<b>16</b>	<b>11</b>	<b>22</b>	<b>17</b>
Standard Deviation	30	40	42	37	35	37	35	26	25	41	51	44	39	43
Coeff. of Variation	-61	-150	-538	260	148	95	182	-906	-25080	323	309	408	178	246

Share of above products in total gross value of agricultural production <sup>1</sup>	77	72	63	62	63	65	59	59	61	65	62	60	64	65
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<sup>1</sup> Share is calculated in terms of undistorted prices.

Source: Calculated from data from OECD and own calculations.

**Table 4: Russian agricultural trade, 1992 to 2004**

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	1992-1995	1996-2000	2001-2004
<i>billion U.S. dollars</i>			
Agro-food trade <sup>1</sup>			
Imports	12.39	9.81	10.35
Exports	1.17	1.17	1.87
Balance	-11.22	-8.64	-8.48
<i>million tons</i>			
Commodity trade balance			
Grain	-12.05	-3.08	6.56
Sunflowerseed	0.34	1.06	0.18
White sugar	-3.80	-4.21	-4.17
Meat	-1.03	-1.67	-2.48
Milk	-1.57	-1.33	-1.51

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Note: Figures give average annual values over the period. Figures for commodities give average annual trade balance. Positive values indicate net exports and negative values net imports.

<sup>1</sup> Covers primary agriculture and processed products.

Source: FAO.

**Table 5: Changes in Russian real agricultural producer prices, 1994 to 2002**

	World price <sup>1</sup>	Exchange rate	Price transmission elasticity <sup>2</sup>	Producer price	Direct price effect	Tariff effect	Combined effect	Incomplete transmission effect	Net effect (9 = 7 + 8 = 4)
	(1)	(2)	(3)	(4)	(5)	(6)	(7 = 5 + 6)	(8)	(9)
<b>1994-97</b>									
<i>percent change</i>									
Wheat	37	-56	6	-2	-39	2	-37	35	-2
Sunflowerseed	-4	-56	87	-50	-58	0	-58	8	-50
Beef	-25	-56	-38	25	-61	-3	-64	89	25
Pork	25	-56	-8	3	-42	1	-41	44	3
Poultry	20	-56	-9	4	-41	-1	-42	46	4
<b>1997-99</b>									
Wheat	-19	138	39	33	88	-3	85	-52	33
Sunflowerseed	-5	138	105	112	128	-22	106	6	112
Beef	9	138	29	41	139	4	143	-102	41
Pork <sup>3</sup>	-5	67	13	5	50	-3	47	-42	5
Poultry	-16	138	37	29	77	-1	76	-47	29
<b>2001-02</b>									
Wheat <sup>4</sup>	-8	6	61	-2	-3	0	-3	1	-2
Sunflowerseed	22	1	-14	-3	31	-6	25	-28	-3
Beef	-18	1	30	-5	-15	--	-15	10	-5
Pork	-15	1	79	-10	-13	--	-13	3	-10
Poultry	14	1	-49	-6	11	--	11	-17	-6

Note: Columns 1, 2, and 4 give the percent change in the variable over the period. The values in columns 5-7 are based on the assumption of complete transmission between

the landed price and producer price. The net effect column (9) gives the net effect on the producer price, and therefore has exactly the same value as column 4.

-- means insignificant change.

<sup>1</sup>In foreign currency.

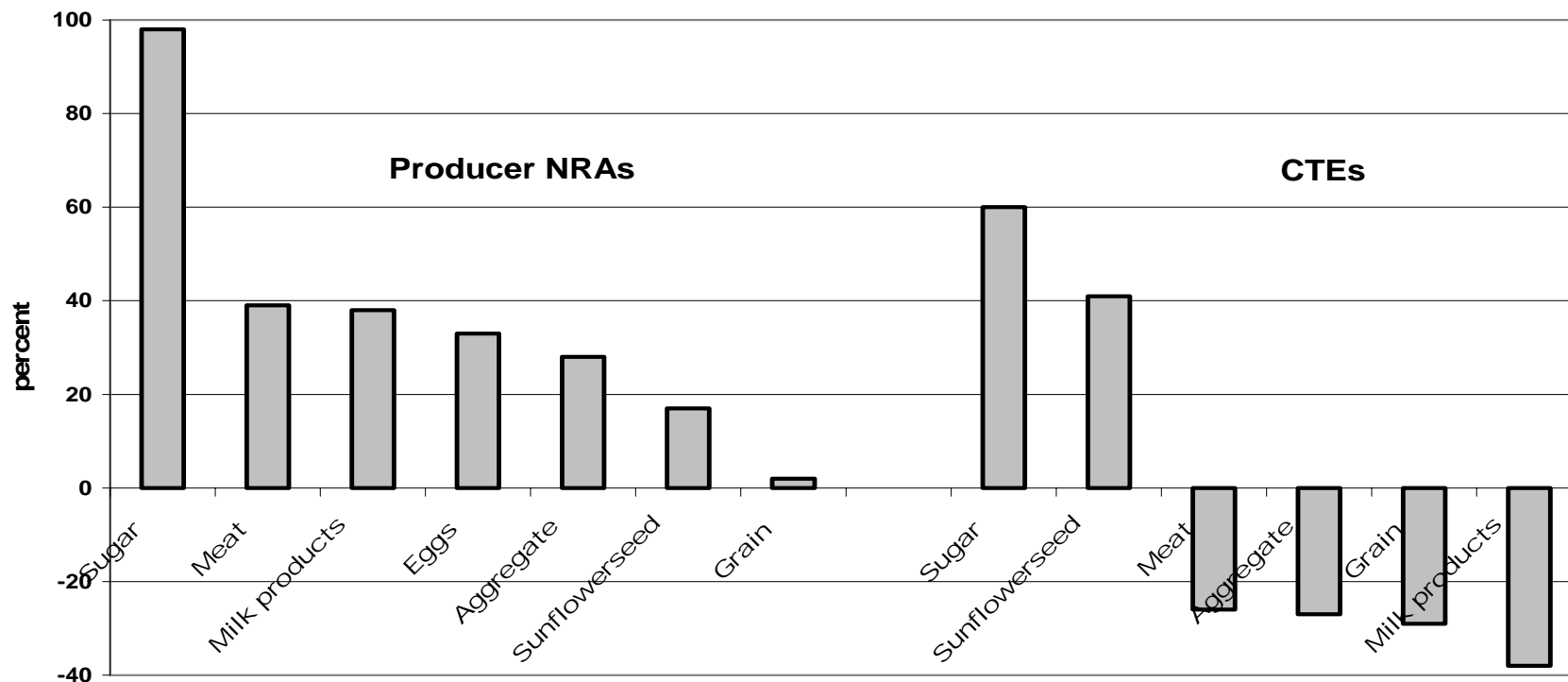
<sup>2</sup>Gives the transmission elasticity between the landed and producer price.

<sup>3</sup>Computed for 1997-2000.

<sup>4</sup> Computed for 2001-03.

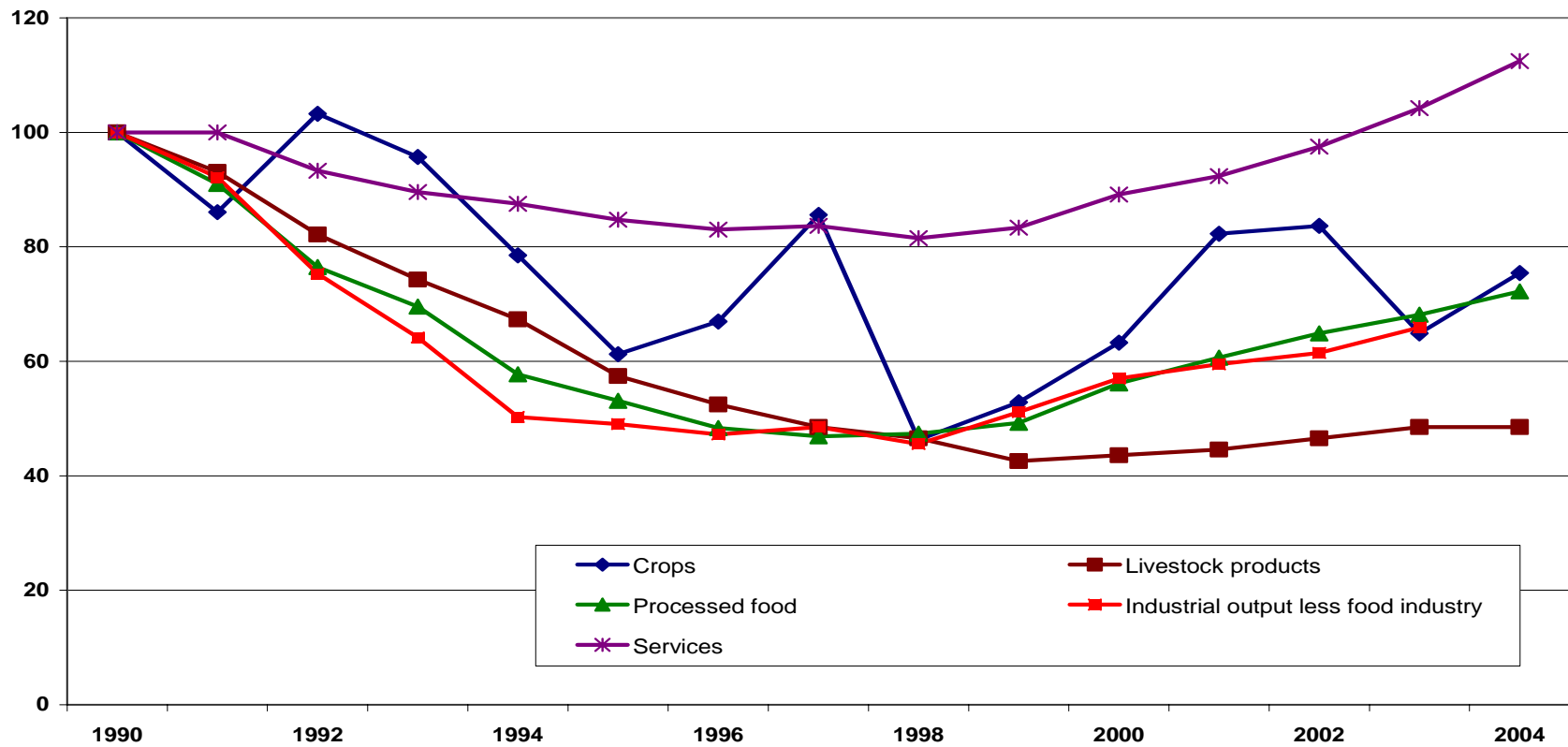
Source: Own calculations.

Figure 1: Nominal rates of producer assistance and consumer tax equivalents, USSR, 1986  
(percent)



Note: The NRA and CTE are expressed as the percentage by which undistorted prices have been altered by agro-food policies. Aggregate values are based on assumption that NRA (CTE) calculated from commodities for which Cook et al. compute PSEs (CSEs) gives aggregate NRA (CTE) for those commodities for which Cook et al. do not compute PSEs (CSEs). Source: Calculated from data from Cook Liefert and Koopman (1991).

Figure 2: Changes in output during transition, Russia, 1990 to 2004

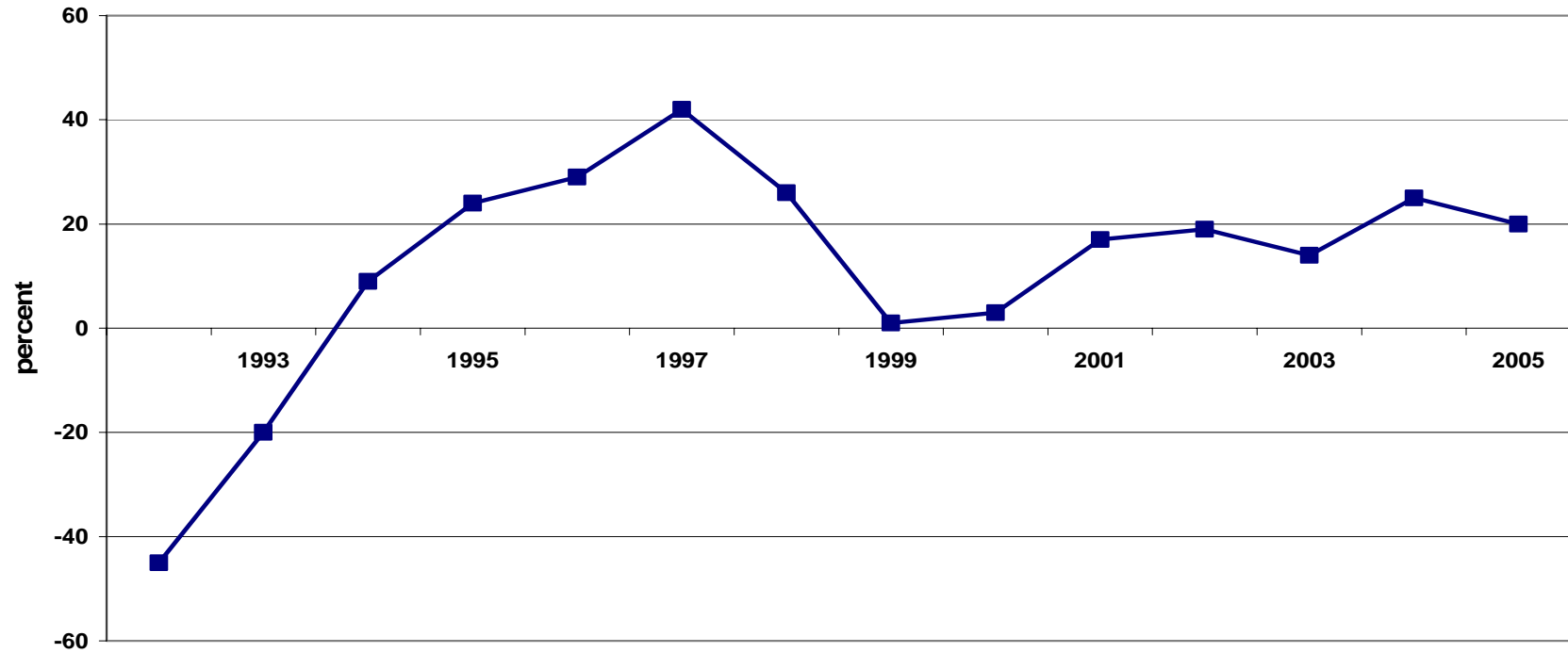


Note: For livestock products, processed food, and industrial output, 1990 = 100; for crops, average annual output over 1989-91 = 100; for services, 1991 = 100.

Source: Goskomstat and PlanEcon.

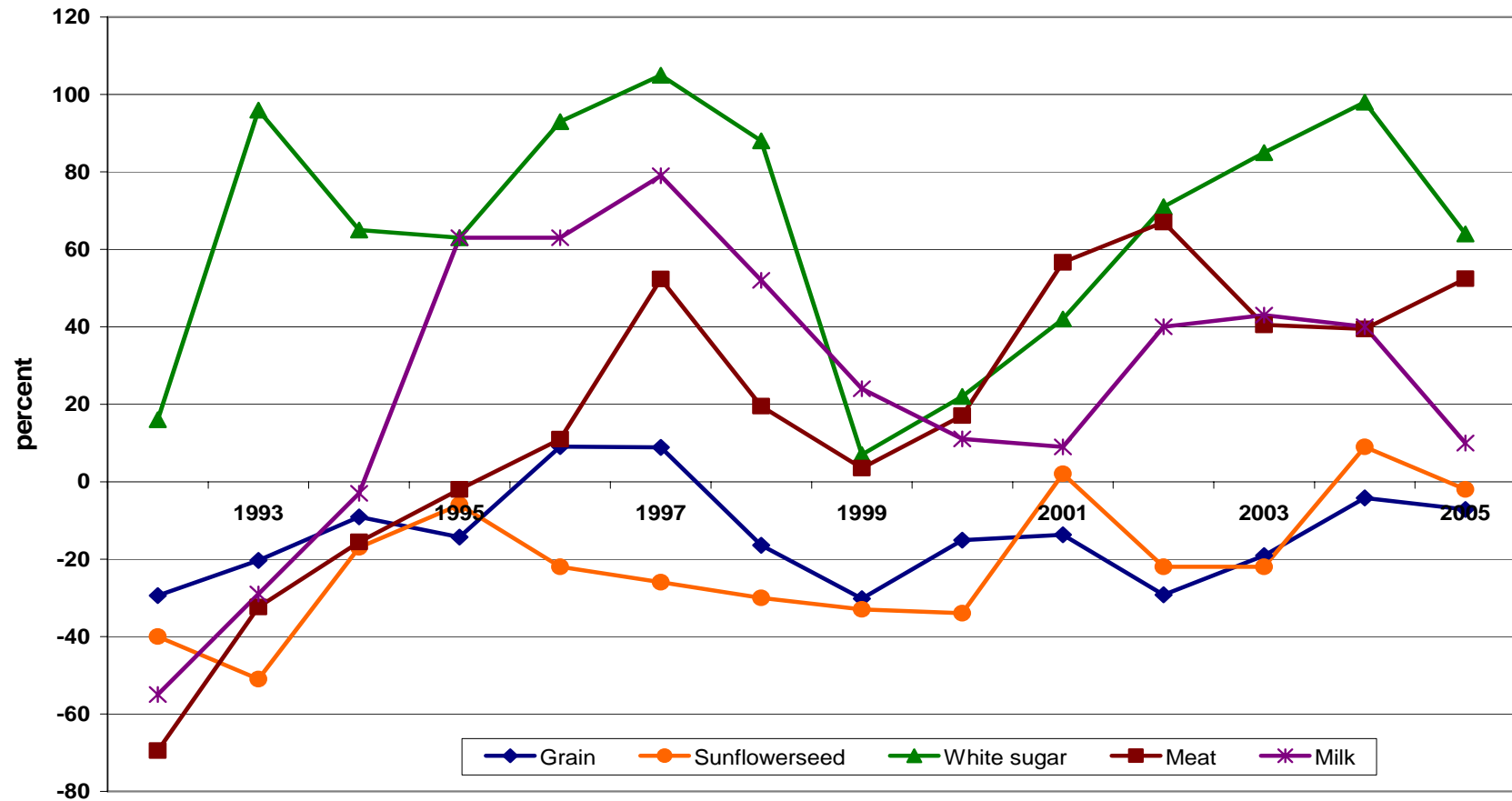


Figure 3: Aggregate nominal rates of assistance for agricultural producers during transition, Russia, 1992 to 2005



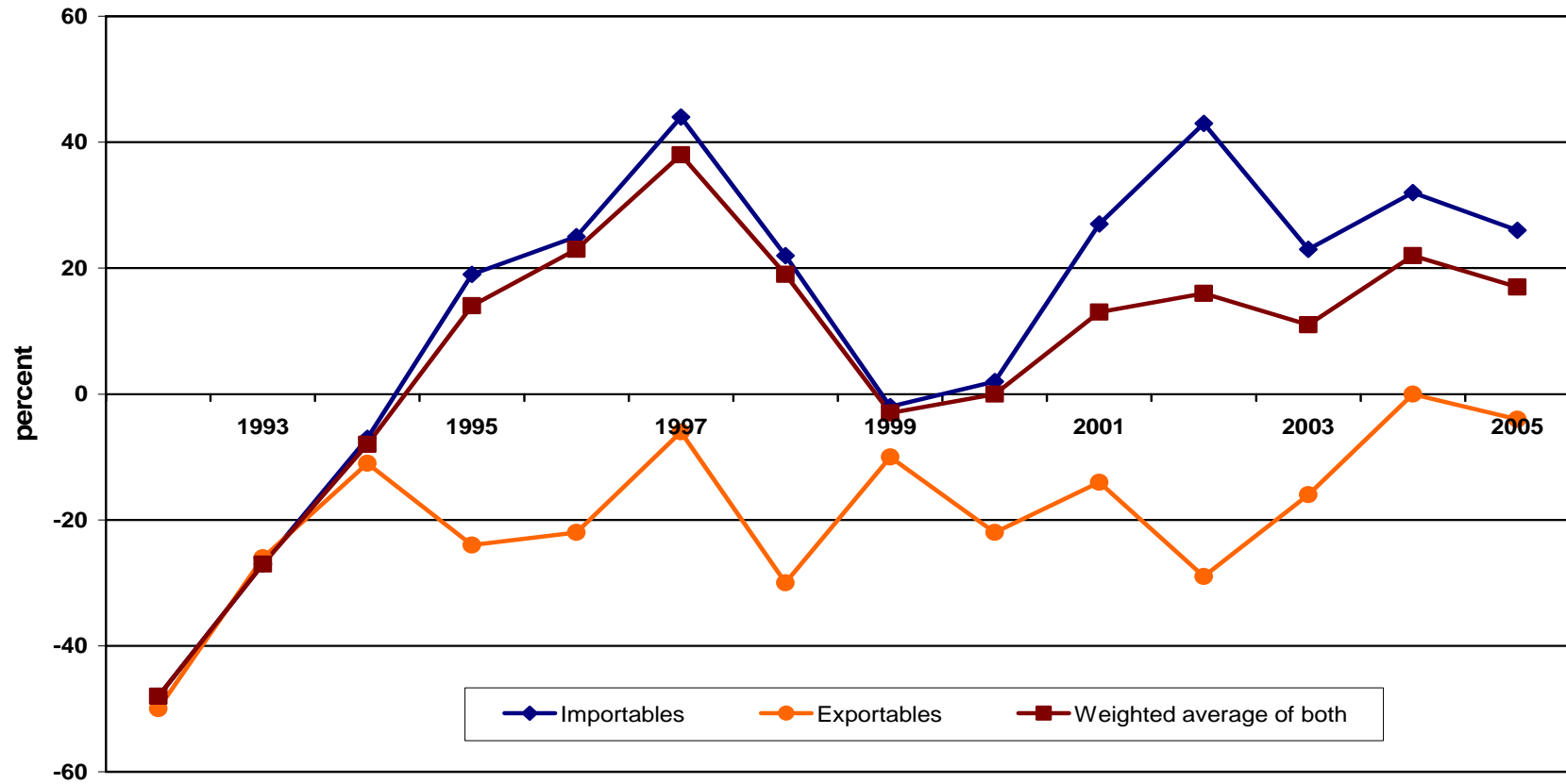
Source: Authors' calculated based on data from the OECD.

Figure 4: Nominal rates of assistance for producers, by commodity group, Russia, 1992 to 2005



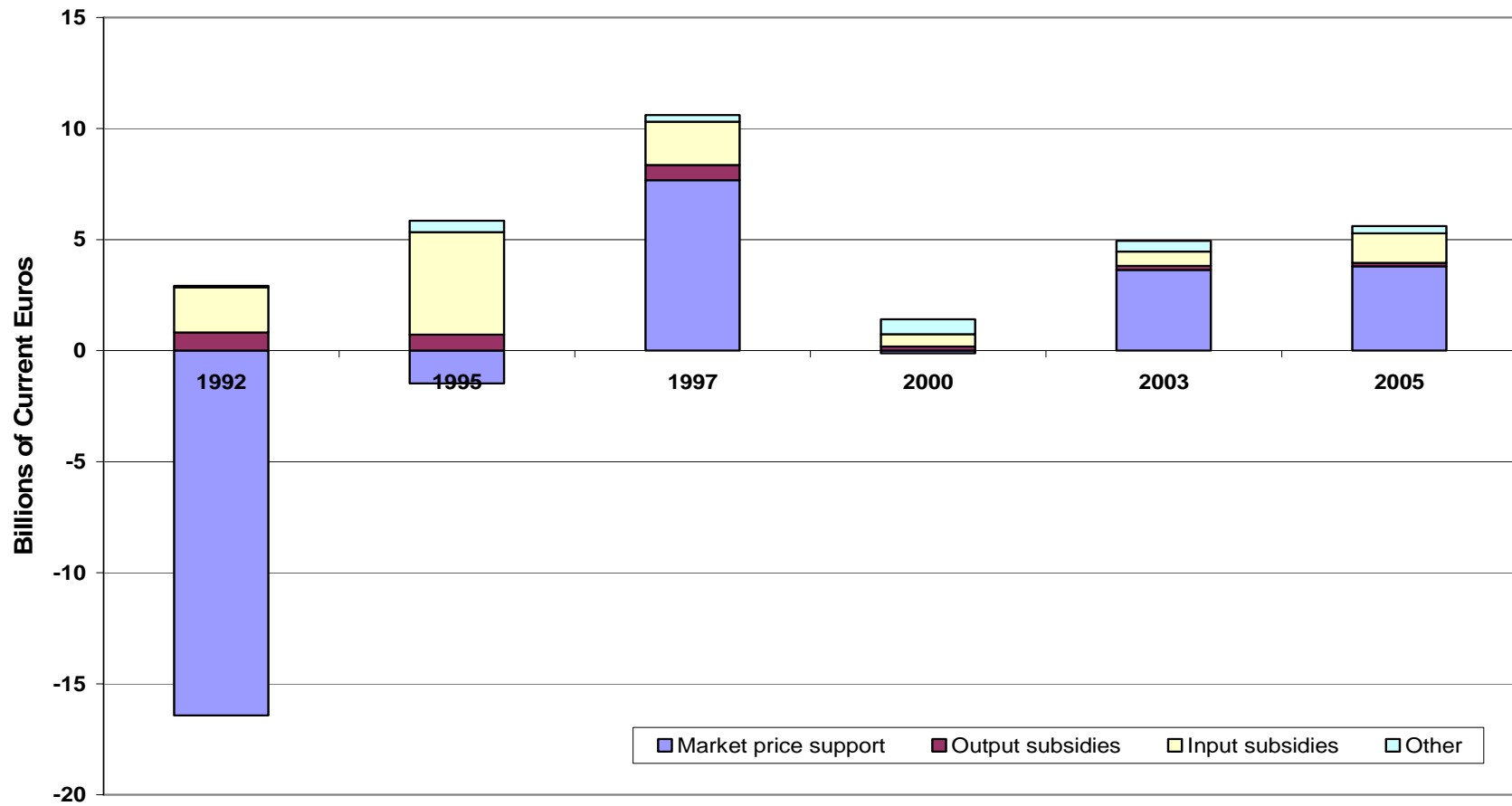
Source: Authors' calculated based on data from the OECD.

Figure 5: Nominal rate of assistance for agricultural importables and exportables, Russia, 1992 to 2005



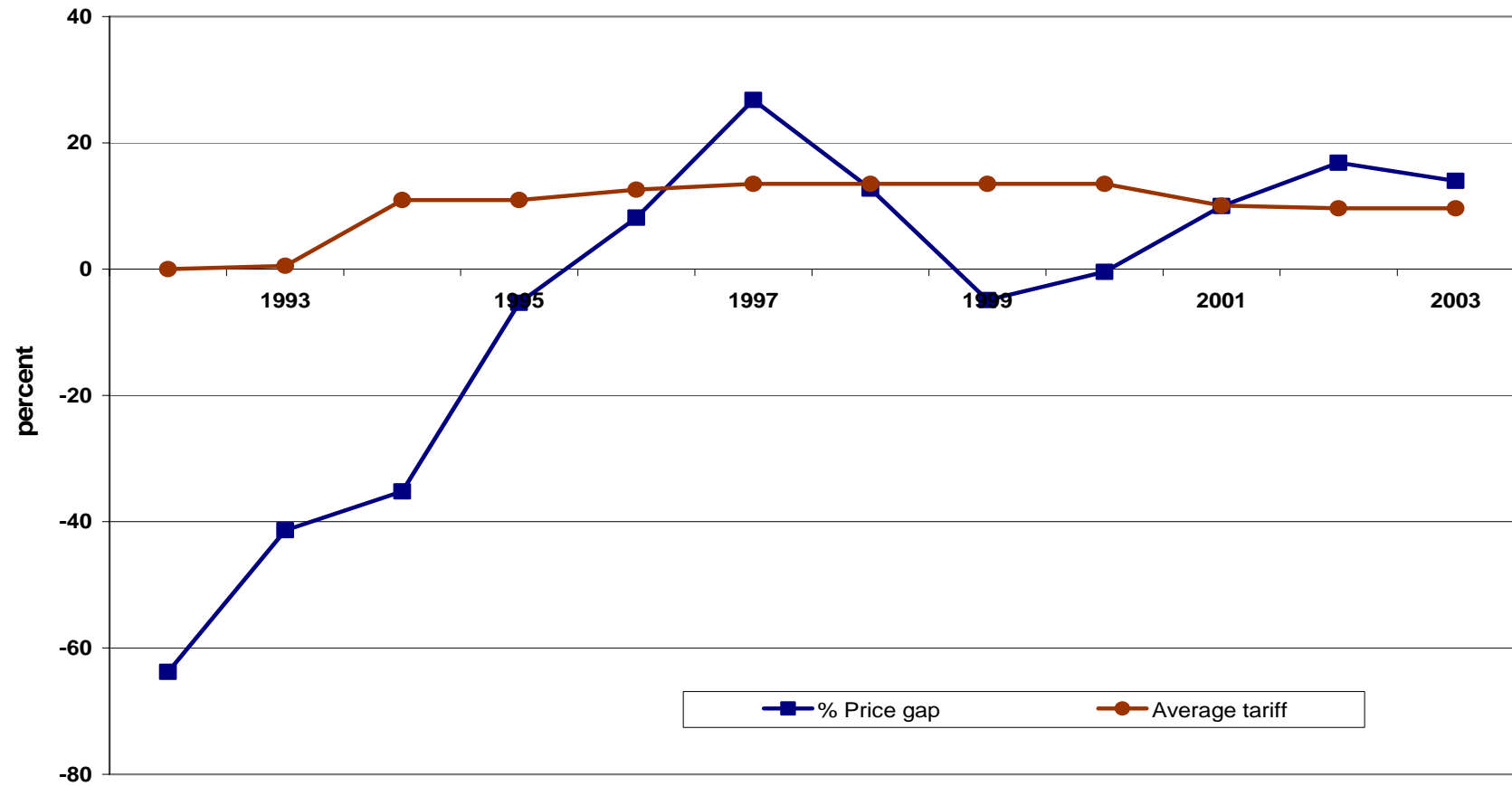
Source: Authors' calculated based on data from the OECD.

Figure 6: Decomposition of nominal assistance to agricultural producers, Russia, 1992 to 2005



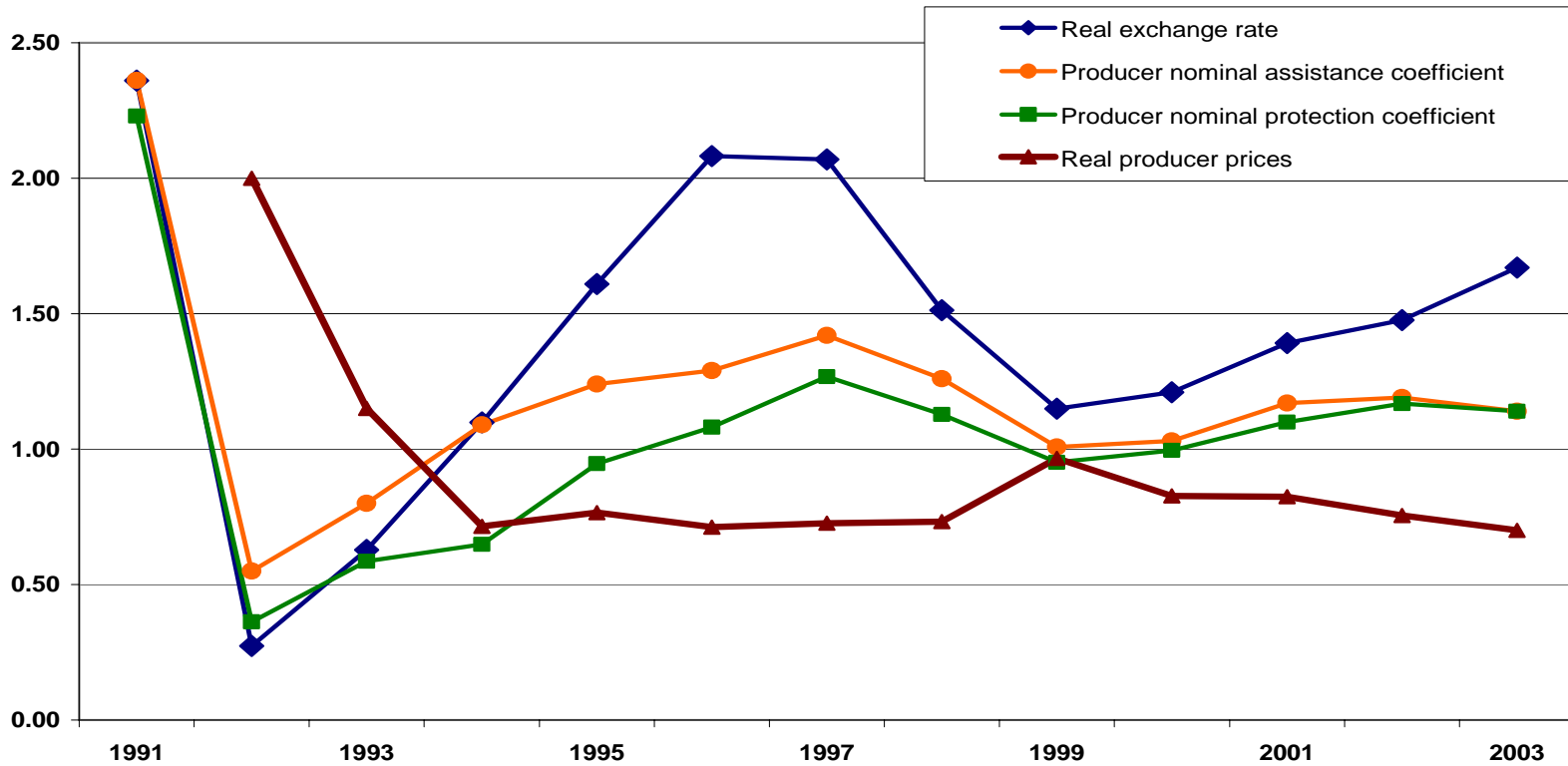
Source: Authors' calculated based on data from the OECD.

Figure 7: Agricultural price gaps and tariffs, Russia, 1992 to 2003



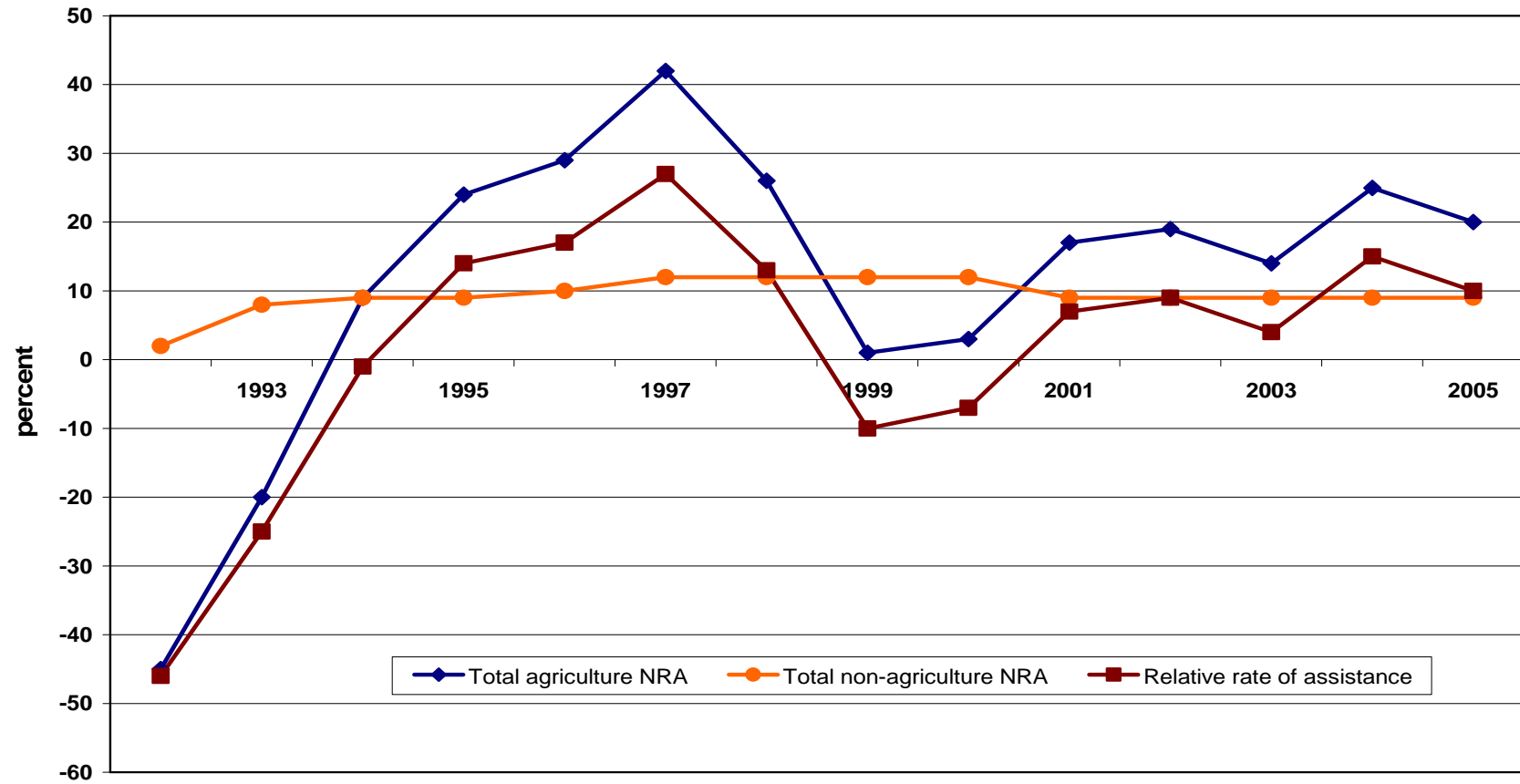
Source: Price gaps calculated by authors from data from OECD, tariff data obtained directly from World Bank WITS.

Figure 8: Foreign exchange rate, agricultural producer assistance, and producer prices, Russia, 1991 to 2003



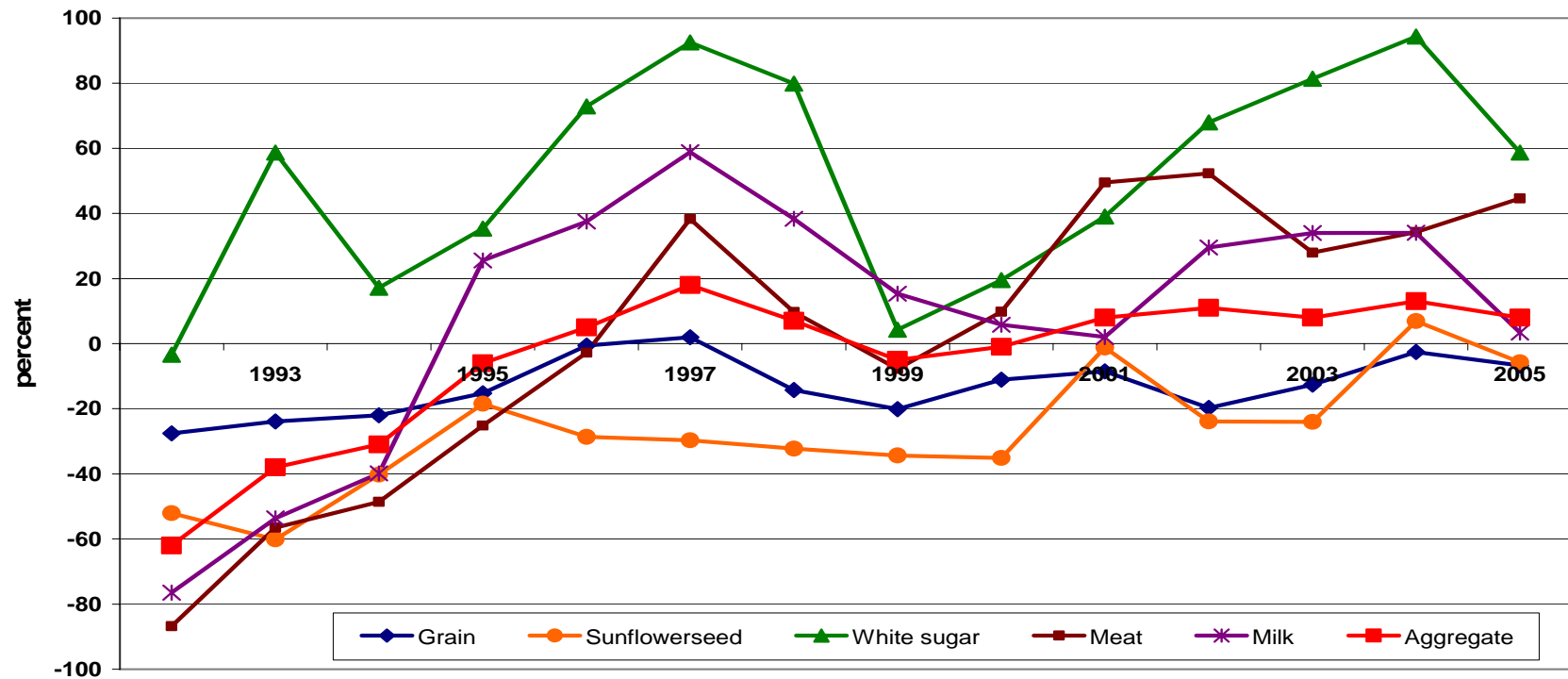
Note: Real exchange rate indexed to value of producer nominal assistance coefficient in 1991. Real producer prices indexed to value of 2 in 1992.  
 Source: For real exchange rate, PlanEcon and Fed Reserve/Haver Analytics. Coefficients of assistance and protection and real producer prices calculated by authors from data from OECD and PlanEcon.

Figure 9: Relative rate of assistance to agriculture, Russia, 1992 to 2005



Source: Authors' calculations based on data from OECD and World Bank.

Figure 10: Consumer tax equivalents for agricultural commodity groups, Russia, 1992 to 2005



Note: Aggregate CTE values are based on the assumption that the CTE calculated from commodities for which OECD computes market price support is the same as the CTE for those commodities for which OECD does not compute market price support.

Source: Authors' calculations based on data from OECD.



## Appendix: Decomposing changes in agricultural producer prices

Using again the example of the Russian wheat market over 1994-97, this appendix examines Liefert's procedure for decomposing changes in producer prices in greater detail than in the text. Appendix Table 1 presents the results. The main additional information added compared to Table 5 in the text is the contribution of changes in specific variables to the change in the producer price ( $P^d$ ).

The column  $\dot{V}$  gives the percent change in  $P^d$  and the variables that determine  $P^d$  (all in real terms) over the decomposition period. The tariff on wheat imports rose from 1 to 5 percent, which accounts for the 400 percent increase in the tariff rate. The direct price, tariff, and combined effect columns are all based on the assumption that transmission of the change in the landed price to producer price is complete. Through the direct price effect, the rise in the world price ( $P^w$ ) increases  $P^d$  by 26 percent, while the drop in the exchange rate (E) decreases  $P^d$  by 65 percent. The aggregate direct price effect is to reduce  $P^d$  39 percent.

The rise in the tariff rate has the *explicit tariff effect* of increasing  $P^d$  3 percent. By interacting with the tariff, the changes in  $P^w$  and E have *implicit tariff effects* on  $P^d$ . The rise in  $P^w$  has the implicit effect of increasing  $P^d$  by 1 percent, while the drop in E has the implicit effect of decreasing  $P^d$  2 percent (because the rate is still so low). The aggregate tariff effect is a rise in  $P^d$  of 2 percent. The combined effect of changes in all variables if transmission were complete is to reduce  $P^d$  37 percent.

If transmission were complete, the rise in  $P^w$  would have the attributable effect of increasing  $P^d$  27 percent. However, the incomplete transmission effect column shows that only 2 percent of this potential rise was realized. The failure of  $P^d$  to rise by the potential maximum because of incomplete transmission has the attributable effect of lowering  $P^d$  by 25 percent. The same analysis applies to the incomplete transmission effects associated with the changes in the exchange rate and tariff. The aggregate incomplete transmission effect is a rise in  $P^d$  of 35 percent. The net effect is the same as in Table 5 in the text, except that the net contribution of the change in each variable to the change in  $P^d$  is identified. For example, the net effect of the drop in the exchange rate is to reduce  $P^d$  by 4 percent.

Appendix Table 1 shows that the full decomposition is a matrix. The columns identify and measure economic reasons why  $P^d$  changes, such as the tariff and incomplete transmission

effects. The rows measure the contribution that changes in specific variables have on  $P^d$ , with respect to each of the column effects, and in the aggregate.

**Appendix Table 1: Decomposition of change in producer price for Russian wheat, 1994-97**

Variable ( $V$ )	$\dot{V}$	Contribution of $\dot{V}$ to $\dot{P}^d$				
		Direct price effect <sup>1</sup>	Tariff effect <sup>1</sup>	Combined effect <sup>1</sup>	Incomplete transmission effect	Net effect
		<i>percent</i>				
World price	37	26	1	27	-25	2
Exchange rate	-56	-65	-2	-67	63	-4
Tariff rate	400	na	3	3	-3	--
Producer price	-2	-39	2	-37	35	-2

Note: na means not applicable.

<sup>1</sup> Assumes complete transmission between landed and producer price.

Source: For  $\dot{V}$ , database for Russian PSEs (OECD) and PlanEcon for price indices used to convert from nominal prices and exchange rate to real values. For contribution of  $\dot{V}$  to  $\dot{P}^d$ , authors' own calculations.

**Appendix Table 2: Nominal rates of assistance to farmers, Russia, 1992 to 2004**

Commodity	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
	<i>percent</i>										
Grain	-29	-20	-9	-14	9	9	-16	-30	-15	-14	-29
Wheat	-46	-20	-11	-11	5	7	-21	-28	-21	-10	-21
Corn	-34	-3	95	47	62	43	12	-14	9	35	-19
Barley	6	-14	-12	-37	-2	--	-10	-41	-16	-17	-25
Rye	-25	-29	1	25	38	27	-12	-23	30	-8	-44
Oats	-32	-28	-12	-16	28	16	-5	-33	-7	-38	-66
Sunflowerseed	-40	-51	-17	-6	-22	-26	-30	-33	-34	2	-22
White sugar	16	96	65	63	93	105	88	7	22	42	71
Meat	-69	-32	-16	-2	11	52	19	4	17	57	67
Beef	-73	-50	-42	-30	-8	51	--	-19	18	48	72
Pork	-70	-11	20	32	27	46	46	39	3	46	59
Poultry	-57	-9	27	49	55	71	31	12	51	110	73
Milk	-55	-29	-3	63	63	79	52	24	11	9	40
Eggs	-64	-38	10	50	31	46	29	6	-17	-1	-8
Total output <sup>1</sup>	-45	-20	9	24	29	42	26	1	3	17	19
Coverage share <sup>2</sup>	77	72	63	62	63	65	59	59	61	65	62

Note: -- means insignificant.

<sup>1</sup>Assumes aggregate NRA calculated from commodities for which OECD computes market price support gives aggregate NRA for those commodities for which OECD does not

compute market price support.

<sup>2</sup>Share of commodities for which OECD computes market price support in total agricultural output.

Source: Authors' calculations based on data from OECD.

**Appendix Table 3: Consumer tax equivalents, Russia, 1992 to 2004**

Commodity	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Grain	-28	-24	-22	-15	-1	2	-14	-20	-11	-9	-20
Wheat	-39	-30	-28	-17	-3	1	-19	-22	-17	-8	-16
Corn	-35	-14	17	9	26	12	3	-8	1	10	-7
Barley	-3	-10	-14	-21	-4	-1	-6	-15	-6	-7	-11
Rye	-26	-37	-31	3	21	17	-14	-22	20	-9	-38
Oats	-15	-15	-13	-10	3	2	-4	-19	-3	-16	-36
Sunflowerseed	-52	-60	-40	-18	-29	-30	-32	-34	-35	-1	-24
White sugar	-3	59	17	35	73	93	80	4	20	39	68
Meat	-87	-57	-49	-25	-3	38	10	-8	10	49	52
Beef	-87	-66	-64	-45	-20	37	-6	-26	12	41	61
Pork	-88	-44	-28	-1	9	34	32	20	-6	35	41
Poultry	-83	-44	-25	4	26	47	14	-6	37	89	55
Milk	-76	-54	-40	26	38	59	38	15	6	2	30
Eggs	-81	-59	-29	16	13	34	19	-5	-24	-8	-18
Total consumption <sup>1</sup>	-62	-38	-31	-6	5	18	7	-5	-1	8	11
Coverage share <sup>2</sup>	77	72	63	62	63	65	59	59	61	65	62

Note: -- means insignificant.

<sup>1</sup>Assumes aggregate CTE calculated from commodities for which OECD computes market price support gives aggregate CTE for those commodities for which OECD does not compute market price support.

<sup>2</sup>Share of commodities for which OECD computes market price support in total agricultural output.

Source: Authors' calculations based on data from OECD.