William Liefert

Could the NIS Region Become a Major Grain Exporter?

When market-oriented economic reform began in the New Independent States (NIS) of the former Soviet Union in the early 1990s, some Western forecasters predicted that reform could transform the region from a large grain importer (as during the Soviet period) into a major grain exporter. However, in each year from 1994 to 2000, the NIS region recorded net grain imports or exports of only a few million metric tons (mmt). In marketing year 2001/02, the region is expected to have net grain exports of about 10 mmt, mainly wheat and barley, to non-NIS countries. The exportable surplus coincides with rising NIS grain production during the last 3 years, yielding a bumper harvest of 93 mmt of wheat and 36 mmt of barley in marketing year 2001/02.

In addition to these grain production and trade developments, there are signs that Russia (if not Ukraine and Kazakhstan) may be improving its agricultural system to increase productivity, perhaps presaging a long-term rise in output. For example, new large, vertically integrated producers in the Russian agriculture and food economy, typically financed and managed by enterprises outside agriculture, could bring more efficient management to the sector than the former state and collective farms that currently dominate agriculture.

During most of the 1990s, annual growth in gross domestic product (GDP) in Russia, Ukraine, and Kazakhstan (the main NIS grain producers) was negative. In the last 2 years, however, GDP in the three countries has risen annually by 5-10 percent. The recent improvement in NIS macroeconomic performance has stimulated grain production and exports, particularly because farms are better able to take advantage of soft credit provided by the government. Soft credit and other forms of subsidies in all NIS countries plunged during the transition period of the past decade, more from dwindling state revenues than from deliberate government policy.

Russia, in its negotiations for accession to the World Trade Organization (WTO), is asking for maximum allowable subsidies that are more than 10 times the current level. This is equal to 4-5 percent of current GDP, and almost equal to the country's agricultural GDP (7 percent of total GDP). Russia is also pushing for export subsidies, despite using no agricultural export subsidies during the transition from a planned to a market economy. The Russian government's optimistic plans for subsidization are due to the expected growth in GDP and government revenue.

Could rising agricultural productivity in Russia and the other major NIS grain producers, combined with possibly expanding subsidies, finally transform the NIS region into a major grain exporter?

Should the NIS Region Export Agricultural Products?

Whether or not the NIS region becomes a major grain exporter depends mainly on whether it can produce grain at a relatively low cost compared with other major grain producers—that is, whether or not the region has a *comparative advantage* in grain production relative to the world market. Recent analysis by USDA's Economic Research Service (ERS), shows that Russia has a comparative disadvantage in producing agricultural outputs compared with inputs (specifically for the years 1996-97).

Among the various methods available for calculation and analysis, the social cost-benefit (SCB) approach was used, which involves computing SCB ratios for all products being analyzed. The SCB ratio for a good equals the cost of domestically producing the good in Russia (measured in rubles), divided by the good's trade price, measured in U.S. dollars. In the numerator of the ratio, tradable intermediate inputs used in production are also valued at world market prices.

The SCB ratios allow the ranking of goods on a comparative advantage spectrum. If the ratio for good A is less (greater) than the ratio for good B, the country has a comparative advantage (disadvantage) in producing A relative to B. This is because it costs less to produce an amount of A that sells for $1 on the world market than it costs to produce an amount of B that sells for $1 on the world market. The SCB ratios ERS computes for agricultural inputs (such as fertilizer and fuel) are less than those for agricultural outputs, which indicates that Russia has a comparative advantage in producing agricultural inputs compared to outputs. The comparative disadvantage of agricultural output production implies that it should decline in favor of the production

of agricultural inputs. The ratios for grains are less than those for meat, which means that Russia has a comparative advantage in producing grain compared with meat. This suggests that meat output should fall more than that of grain.

These results are wholly consistent with—and help explain—the major changes in Russian agricultural production and trade during the transition. The livestock sector (both animal inventories and output) has been cut in half since 1992, and imports of meat (especially poultry from the U.S.) have surged. The elimination of the massive subsidies given to livestock producers during the Soviet period resulted in falling meat production, bringing it more in line with its comparative advantage. With the contraction of the livestock sector, the large Soviet-era imports of grain, soybeans, and soybean meal, needed to feed livestock herds during the Soviet period, have ended. Use of intermediate inputs in agriculture (fertilizer, machinery, fuel, feed) has fallen substantially, while the country has become a large exporter of products that could be used domestically as inputs in agricultural production (including 80 percent of its fertilizer output). The large drop in domestic use of key inputs such as fertilizer, as well as heavy export of those products, has cut grain yields and harvest levels, working against the country being a big grain exporter.

Although ERS research on NIS agricultural comparative advantage has been confined to Russia, the commodity developments identified for Russia during transition apply also to Ukraine, Kazakhstan, and the NIS region in general. These include contraction of the livestock sector; virtual elimination of imports of grain, soybeans, and soybean meal; a large drop in domestic use of intermediate agricultural inputs; and export of agricultural inputs. Ukraine, for example, exports about two-thirds of its fertilizer. These similar commodity developments suggest that the cost structure of agricultural production throughout the NIS is similar to Russia's. The economic fundamentals of the NIS region, reflecting relative costs of production of outputs and inputs, currently do not support large grain trade—either imports or exports.

Using Models for Forecasts on NIS Agriculture

USDA's Economic Research Service (ERS) uses forecasting models for Russia, Ukraine, and the rest of the NIS combined, which are integrated into a world agricultural model to generate long-term projections. The individual models incorporate assumptions for values that reflect the analysis and judgement given in this article on:

- real exchange rates;
- consumer income;
- price and exchange rate transmission elasticities, which represent the degree of these economies' integration into world agricultural markets;
- agricultural productivity;
- state subsidies to agriculture; and
- state trade restrictions.

For more information concerning forecasts for NIS agriculture, as well as other topics in NIS agriculture, see the ERS briefing rooms on Russia and Ukraine.
http://www.ers.usda.gov/briefing/Russia
http://www.ers.usda.gov/briefing/Ukraine

Projections for U.S. and world agricultural supply, demand, trade, and prices can be found at the ERS agricultural baseline briefing room.
http://www.ers.usda.gov/briefing/baseline.

Grain Export Levels & Competitiveness Could Change

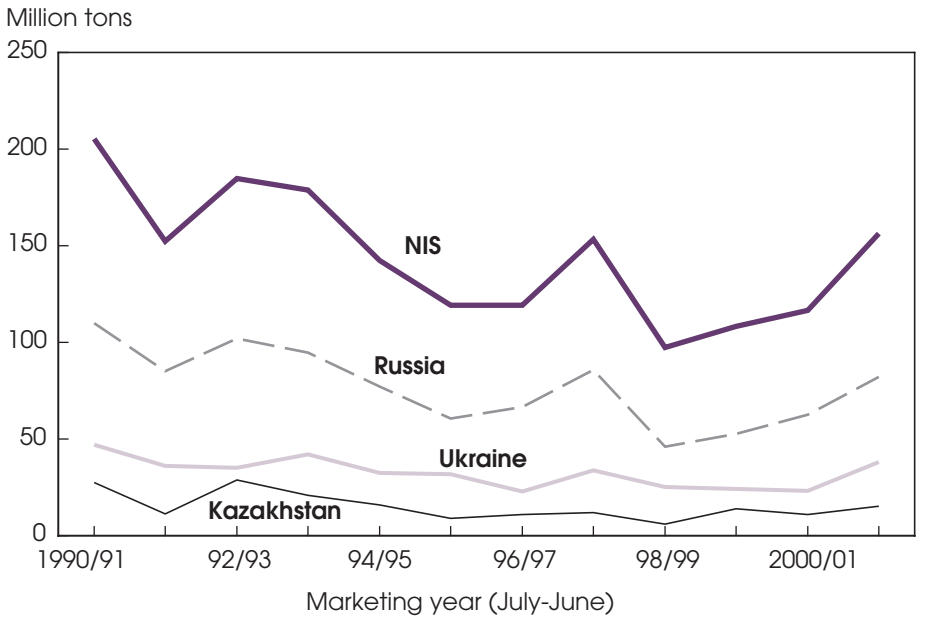
The SCB calculations provide a recent "snapshot" of Russia's agricultural comparative advantage. Production costs and other economic fundamentals are currently working against a large volume of NIS grain exports. In the future, a number of factors could change to alter the cost-competitiveness and export volumes of grain, either positively or negatively. These variables include:

- weather;
- real exchange rates;
- consumer income;
- port capacity constraints;
- agricultural productivity; and
- state policy.

Weather. The rise in grain output over the last 3 years, resulting in medium-level grain exports in 2001/02, could be explained largely and simply by favorable weather. Since 1998's severe weather, which resulted in the NIS region's lowest grain harvest in decades, weather has steadily improved, with 2001 an outstanding year for grain and other crops. The 2001 NIS grain harvest was 157 mmt, compared with average annual output over 1996-2001 of 126 mmt. Weather to date for 2002 has generally been favorable, but many crops are just entering the most critical period of development. For long-term predictions, the effects of weather are assumed to be neutral.

Real exchange rates. Russia's economic crisis of 1998, which affected the entire NIS region, resulted in major depreciation of NIS currencies, in both nominal and real (inflation-adjusted) terms. For example, from the start of the crisis in August 1998 through the end of 1999, the Russian *ruble* and Ukrainian *hryvnia* depreciated in nominal terms by about 80 and 65 percent, respectively. Currency depreciation substantially improved the price competitiveness of NIS grain on the world market, and likely helped the NIS region become a grain exporter in 2001/02. In 2000, however, NIS currencies began appreciating in real terms (because the inflation rate exceeded the nominal rate of currency depreciation). In the view of Western financial experts, NIS currencies are still undervalued relative to Western currencies. Real currency appreciation is therefore likely to continue in the near to

NIS Grain Production Has Risen in Recent Years



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medium term, particularly if NIS economies keep growing at high rates. The effect of changes in real exchange rates on NIS grain exports is expected to be negative.

Consumer income. GDP is projected to grow in most NIS countries during the next decade by 4-5 percent a year. Given that demand for livestock products is relatively sensitive to changes in consumer income, GDP growth might help revive demand for meat products, and consequently for feed grains as well. The growing domestic demand for feed will cut into domestic grain surpluses available for export.

If agriculture and food markets in the NIS region are functioning well internally and are well integrated into world agricultural markets, any rise in consumer demand for meat would have little or no effect on grain exports. When domestic markets are well integrated into world markets, domestic producer prices are predominantly determined by world trade prices. Thus, an increase in domestic demand for a foodstuff, such as meat, will only slightly affect domestic producer prices, and therefore only slightly affect domestic meat production. Most of the rise in domestic demand for meat would be met by additional imports (or by reduced exports, if the country is a net meat exporter), not by a change in meat output. There would be little or no secondary effect on domestic grain markets. If markets in the NIS region are not functioning well, however, the projected GDP growth should significantly stimulate meat producer prices and domestic production.

How well integrated are NIS agriculture and food markets into world markets? ERS estimates indicate that the transmission of changes in world trade prices, and in the exchange rate, to changes in Russian domestic prices for foodstuffs is fairly weak. Thus, the country's integration into world agricultural markets is poor. Undeveloped physical and institutional infrastructure (such as poor transportation and weak legal and market information systems) segment regional markets from each other and cut off regional markets from the world market. Although the ERS estimates are confined to Russia, the other NIS countries have made no more progress than Russia in improving their physical and institutional infrastructure for agriculture. Another factor that can "separate" regional markets from the world market, to the benefit of regional producers that must compete with imports, is differences in quality and taste between locally produced and imported goods, such that consumers prefer their local products.

Over the next decade, the NIS countries are likely to improve their infrastructure and integration into world markets. Increased Western investment (which the Russians identify as a major motive for joining the WTO) could play a key role in developing agricultural infrastructure and linkages. NIS grain producers might also improve their skills at marketing their output to foreign buyers. Nonetheless, progress in these areas will probably not be rapid. Because of lingering segmentation of regional markets, the anticipated growth in consumer income is likely to motivate some rise in domestic production of livestock products. The effect on grain exports is expected to be negative.

Port capacity constraints. Ports in both Russia (such as Novorossysk) and Ukraine (such as Odessa) operate under capacity constraints for exporting grain. All Black Sea ports, through which Ukraine's and much of Russia's grain exports have to move, currently have a total annual grain export capacity of only about 8 mmt (lack of elevators being the main bottleneck). Capacity should improve over time, but progress will be slow in building this physical infrastructure, which will continue to constrain growth in grain exports.

Agricultural productivity. Agricultural productivity (output per unit of input) in the Soviet Union was traditionally much lower than in the U.S. and other western countries. If the vast potential for productivity growth were realized, reform could transform the NIS region into a major grain exporter.

However, recent analyses find that productivity growth in NIS agriculture during the transition has been poor. ERS estimates indicate that from 1993 to 1998, productivity in Russian crop production fell by 8 percent overall. Another study finds that total agricultural productivity in Russia and Ukraine rose from 1992 to 1997, but by a paltry total of 7 and 2 percent, respectively (the difference in results is largely due to the large drop in fertilizer use from 1992 to 1993). Failure to improve productivity is due to the incom-

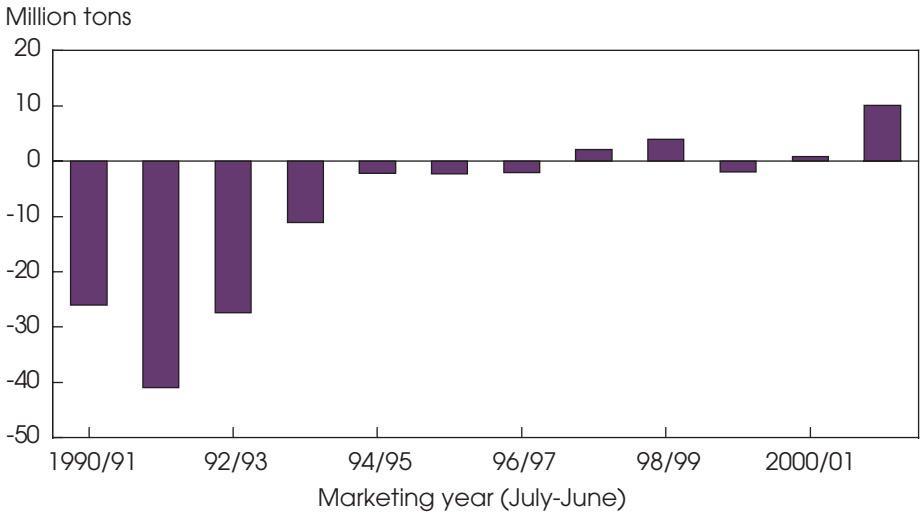
plete implementation of reform in Russia, Ukraine, and most other NIS countries. Reforms are needed to improve farm-level organization and management, as well as to develop the physical and institutional infrastructure that supports agricultural production. However, private farming has not developed to any substantial degree; effective land and rural credit markets have not emerged; and, a commercial legal system is not yet in place to protect property and enforce contracts.

Russia shows signs of perhaps developing more progressive forms of farm organization and management. New, vertically integrated producers are emerging in the agriculture and food sector, with finance and management often coming from outside the sector. These new operators could stimulate productivity growth by improving both the technology of the country's production and its system of organization and management. Yet, no empirical evidence exists to show whether these new operators have increased productivity. Also, even if successful, the new producers might simply represent the best possible management and production practices within the economy's existing technology and administrative systems. Any productivity gains might come from strengthening vertical ties for production and distribution of output, rather than from real technological or systemic change.

Legislation was recently passed in Ukraine, and a similar law is proposed by the Russian government, that would sanction agricultural land markets, allowing the relatively free buying and selling of farmland. The complete implementation of land reform, allowing the use of land as collateral, would help develop a credit market for agriculture. It is unclear, however, whether or not the land legislation will be successfully implemented.

If thoroughly implemented, these reform efforts should have a positive effect on productivity. Because there is little evidence that reforms will be pursued with the necessary vigor, productivity growth during the next decade is anticipated to be moderate. The effect of productivity growth on grain exports is expected to be only mildly positive.

Net Grain Exports from NIS Up in 2001/02



NIS net grain exports beyond the NIS region.

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State policy. Although institutional-type reforms can affect grain output and trade volumes by raising productivity, there are two categories of state policy that can more directly impact grain export potential. The first is subsidies for production and exports. Current levels of state support to NIS agriculture are historically low. The NIS agricultural establishments are hoping that GDP growth will provide the government with the budgetary resources to raise support. In its agricultural negotiations for WTO accession, Russia is pushing for maximum allowable budget subsidies more than 10 times the current level, as well as for export subsidies (which Russia has not used during the transition period). Because NIS support to agriculture is more likely to rise than fall in the near to medium term, the effect of changes in support policies on grain exports would be positive.

The second state policy with direct impact is regional governmental controls on grain outflows, which have the effect of reducing national exports. Such controls are common in both Russia and Ukraine. There are two possible reasons for the restrictions:

- regions want to ensure that local food needs are met; or
- local officials deliberately create price differences between regions, then control grain outflows in order to earn profits by selling to regions where prices are higher.

The federal governments of the NIS countries oppose these controls. Such restrictions could also create monitoring and enforcement problems for WTO membership. Thus, over time these controls are likely to weaken, and the effect of the policy change on grain exports is predicted to be positive.

NIS Region Likely to Be a Medium-Level Grain Exporter

Likely developments in the future that would exert downward pressure on NIS grain exports are the real appreciation of currencies and income growth. Limited port capacity for exporting grain would not cause current export levels to drop, but rather would act as a constraint on large growth in exports. The likely developments that will have a positive effect on future grain export volumes are:

- improvement in physical and institutional infrastructure;
- productivity growth in agriculture; and

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- changes in state policy, specifically rising support to agriculture and weakening regional controls over grain outflows.

Among these developments, productivity growth is probably the most influential (even given our expectation of only modest growth over time). It would improve agriculture's cost competitiveness and thereby move the NIS toward a comparative advantage in agricultural production.

On balance, developments that will exert a positive effect should outweigh those that will exert a negative effect. Over the next 10 years or so, the NIS region could well become a medium-level grain exporter of 5-10 mmt per year.

In the most recent USDA global agricultural 10-year projections, the NIS region is a net grain exporter (to countries beyond the region) of about 7 mmt by 2012. Under more optimistic productivity growth assumptions, NIS net grain exports could reach 18 mmt. Under either scenario, reform will have finally transformed the NIS region from a major grain importer into a grain exporter. AO

William Liefert (202) 694-5156
wliefert@ers.usda.gov
Stefan Osborne (202) 694-5154
sosborn@ers.usda.gov
Michael Trueblood (202) 694-5169
trueb@ers.usda.gov
Olga Liefert (202) 694-5155
oliefert@ers.usda.gov

Further Reading

Livestock Sectors in the Economies of Eastern Europe and the Former Soviet Union: Transition from Plan to Market and the Road Ahead, AER-798, ERS-USDA, February 2002. http://www.ers.usda.gov/publications/aer798/

Liefert, W., "Comparative (Dis?)Advantage in Russian Agriculture," *American Journal of Agricultural Economics*, forthcoming.

Changes in Agricultural Markets in Transition Economies, AER-806, ERS-USDA, February 2002. http://www.ers.usda.gov/publications/aer806/

Upcoming Reports—USDA's Economic Research Service

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May

10 *World Agricultural Supply and Demand Estimates (8:30 a.m.)*
13 *Oil Crops Outlook***
*Cotton and Wool Outlook***
*Rice Outlook***
14 *Feed Outlook (9 a.m.)***
*Wheat Outlook (9 a.m.)***
15 *Livestock, Dairy, and Poultry Situation and Outlook***
20 *U.S. Agricultural Trade Update***
21 *Agricultural Outlook (3 p.m.)**
22 *Fruit and Tree Nuts Outlook***
23 *Sugar and Sweeteners Outlook**
24 *Floriculture and Environmental Horticulture Outlook and Yearbook***
30 *Sugar and Sweeteners Outlook***
31 *Outlook for U.S. Agricultural Trade***

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