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Black Sea Grain Exports

Will They Be Moderate or Large?

William Liefert, Olga Liefert, Ralph Seeley and Ed Allen*

Abstract

Large grain exports by the Black Sea countries in 2001-03 raise the prospect of these countries becoming major grain exporters in the long term. To do so, they will have to (1) increase the productivity of input use, which would allow them to sell at more competitive prices in world grain markets, thereby improving their competitiveness; and (2) reduce the internal transport and transaction costs of shipping grain from farm to port. If growth in productivity (output per unit of input) in the region is modest, in 10 years the Black Sea region could be exporting a net 10 million metric tons a year. With higher productivity growth, exports could rise to 30-40 million metric tons. Such large grain exports would strongly affect the world grain market, since over 2000-03 total annual world grain exports averaged 237 million tons.

Keywords: transition economies, grain, agricultural trade, Russia, Ukraine.

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* Agricultural economists, Market and Trade Economics Division, Economic Research Service, USDA.

Introduction

When market-oriented reform began in the New Independent States (NIS) of the former Soviet Union in the early 1990s, some Western forecasters predicted that it could transform the region from a large grain importer (as during the Soviet period) into a major grain exporter. Some predictions held that the Balkan countries of Romania, Bulgaria, and Serbia could collectively become modest grain exporters as well. Yet, in each year during 1996-2000, both the NIS and Balkan regions had net grain imports or exports of only a few million metric tons (mmt).

In marketing years 2001/02 (July-June) and 2002/03, however, the NIS and Balkan countries that export grain through the Black Sea had total net grain exports of 25 and 33 mmt (with the bulk of exports going to "non-Black Sea countries," especially those in the Middle East and North Africa such as Saudi Arabia, Egypt, and Algeria, and to the EU). Of the 58 mmt of net grain exports by the Black Sea region in 2001/02 and 2002/03 combined, 42 mmt were wheat and 16 mmt were coarse grain. The exportable surpluses coincided with higher grain production in the NIS region and good harvests in the Balkan region in those years (table 1). However, both grain production and exports in the Black Sea countries were down considerably in 2003/04, with net exports at only 8 mmt from July 2003 through June 2004.

So, are these countries becoming major long-term grain exporters, as predicted, with the downturn in 2003/04 an anomaly? Or was the strong performance in 2001-03 the aberration, the result of unusually good weather? Answering this question requires assessing the potential of NIS/Balkan countries to improve the cost competitiveness of their grain production at the farm level. Can they reduce costly impediments to moving surplus grain from the farm to the border? How might support and trade policy changes, particularly those motivated by negotiations for accession to the World Trade Organization (as in the case of Russia and Ukraine), affect future trade? What are the foreign markets for these countries' grain, and are these markets limited?

This report focuses on the main NIS and Balkan grain producers. The former include Russia, Ukraine, and Kazakstan, and the latter Romania, Bulgaria, Serbia, Croatia, and Hungary (though Hungary borders, rather than lies within, the Balkans). All eight countries export most, or a sizable fraction, of their grain through the Black Sea, so we refer to them collectively as the "Black Sea grain exporters."

How Grain Export Levels and Competitiveness Could Change

Gauging the export potential of Black Sea countries requires identifying and then examining the key factors that affect their production, cost competitiveness, and trade volumes of grain. These variables include:

- Weather,
- Real exchange rates,
- Costs of primary production,
- Consumer income,
- Infrastructure for internal movement of grain,
- Port capacity constraints,
- State policies,
- Domestic price adjustments, and
- Foreign market conditions.

Weather. The rise in grain output that enabled large exports by Russia, Ukraine, and other Black Sea countries in 2001-03 could have been due simply to favorable weather. In 1998, severe weather resulted in the NIS region's lowest grain harvest in decades, such that the Black Sea countries' combined grain harvest was only 122 mmt (USDAa). Unfavorable weather also caused relatively poor harvests in 1999 and 2000; in 2000, the region exported only 5 mmt of grain. However, very good weather years for grain followed in 2001 and 2002. The Black Sea countries' grain harvests jumped to 182 and 179 mmt, compared with average annual output over 1996-2000

Table 1—Grain production and net trade

Countries	1996-2000*	2001	2002	2003**
		Million metric tons		
Russia				
Production	63	82.1	84.0	64.3
Trade	-2.9	5.2	14.7	6.0
Ukraine				
Production	26	38.4	37.7	19.2
Trade	2.6	8.8	9.2	-1.6
Kazakstan				
Production	10.9	15.6	15.4	14.5
Trade	4.2	4.3	5.9	6.5
Romania				
Production	15.7	15.2	12.7	8.9
Trade	0.6	0.7	-0.3	-2.7
Bulgaria				
Production	4.7	4.8	5.5	3.1
Trade	0.2	0.9	1.3	-0.4
Hungary				
Production	11.6	14.4	11.4	8.5
Trade	2.6	4.6	1.9	0.9
Serbia and Montenegro				
Production	7.8	8.3	8.4	5.6
Trade	-0.2	0.2	0.3	-0.2
Croatia				
Production	3.0	3.1	3.6	2.6
Trade	0.002	0.05	0.3	-0.2
Total				
Production	142.7	181.9	178.7	126.7
Trade	7.1	24.8	33.3	8.3

* Average annual for marketing years July-June.
** For production, estimated for July 2003-June 2004. For trade, actual trade from July 2003 through February 2004. Note: All years are marketing year, beginning in July of year given through June of following year. For trade, positive values are net exports and negative values net imports.
Source: USDAa.

of 143 mmt.[1] Of the 360 mmt of grain produced by Black Sea countries in 2001 and 2002, 197 mmt was wheat and 163 mmt coarse grain. Among the Black Sea countries, only Romania suffered bad weather in 2002 (drought), which hurt its grain harvest.

In 2003, however, poor weather in the NIS and Balkan regions reduced the grain harvest to just 127 mmt. Russian and Ukrainian grain production was 64 and 19 mmt, compared with average annual output in 2001-02 of 83 and 38 mmt. Severe winters in both countries resulted in substantial grain winterkill. Romania and Serbia suffered drought in 2003. Still, although weather can largely determine crop output in any given year, it is a nonfactor in forecasting.

Real exchange rates. Russia's economic crisis of 1998—which affected not only the entire NIS region but also the Balkan and other transition countries—resulted in major depreciation of NIS currencies in both nominal and real (inflated-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 real terms by almost 50 percent. During this time, Balkan country currencies also depreciated in both nominal and real terms (though by less than in the NIS countries). Currency depreciation improved the price competitiveness of NIS and Balkan grain on the world market, and thereby helped these countries become major grain exporters in 2001/02 and 2002/03.[2]

In 2000, however, NIS and Balkan currencies began appreciating in real terms (because the inflation rate exceeded the nominal rate of currency depreciation). In the view of Western macroeconomic forecasters, NIS and Balkan currencies are still undervalued relative to Western currencies. For example, PlanEcon forecasts real appreciation for all these countries' currencies over the near to medium term, with the Bulgarian *leva*, Hungarian *forint*, and Russian *ruble* appreciating in real terms from 2003 to 2007 by 25, 14, and 12 percent. This and the real appreciation already underway since 2000 should diminish the grain exports of Black Sea countries.

Costs of primary production. Black Sea producers can best improve their price competitiveness by increasing input productivity. By lowering the amount of inputs needed to produce a unit of output, productivity growth would reduce per unit costs of production. Agricultural productivity in the Black Sea countries has been much lower than in the United States and other Western countries. If its vast potential for productivity growth were realized, say by moving to a superior technology or system of production, the NIS region could become a major grain exporter. Western forecasters, in fact, predicated their most optimistic predictions on the expectation that NIS grain producers would increase agricultural productivity through technological and systemic change.

However, recent analysis finds that productivity growth in Russia, Ukraine, and Kazakstan (the main Black Sea producers) has been poor. ERS estimates (Osborne and Trueblood, 2004) indicate that from 1993 to 1998, productivity in Russian crop production fell by 8 percent overall. Another study (Lerman et al., 2003) finds that total agricultural productivity in

[1] This report follows the USDA practice of excluding buckwheat and pulses in grain output and trade figures.

[2] The reason why the depreciation in countries' currencies in 1998-99 helped the price competitiveness of their grain exports as late as 2001-03 is that the magnitude of the depreciation in 1998-99 was so great that exchange rates were still lower in 2001-03 than before the depreciation of 1998-99. This was the case despite the fact that countries' currencies began to appreciate in real terms in 2000.

Russia and Ukraine rose from 1992 to 1997 by just 7 and 2 percent, while in Kazakstan it fell 5 percent. Much of the NIS' poor agricultural performance is due to the incomplete implementation of reform in Russia, Ukraine, and most other NIS countries. Reforms are needed to improve farm-level organization and management, and 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. Such developments are necessary to improve the motivation and means of all agri-food enterprises to reduce the costs of producing, transporting, and processing agricultural output. For example, the absence of a well-developed commercial legal system substantially raises the transaction costs and risk (such as not being paid on time, or at all, for deliveries) in forging and managing commercial relationships.

Recent developments in Russia and Ukraine, however, could help spur growth in agricultural productivity. Both countries recently passed legislation that sanctions agricultural land markets, allowing the relatively free buying and selling of farmland (though in Russia's case the new law largely codified a mass of earlier legislation on land affairs). In addition, large vertically integrated producers are emerging in the agri-food sector of both countries, with finance and management often coming from outside the sector (though little of the investment is from foreign sources). These new operators could stimulate productivity growth by improving both the technology of the country's production and its system of organization, management, and incentives, with greater concern for reducing waste and costs and for rewarding initiative and superior job performance.

If effectively implemented, the new land legislation and new types of production should boost productivity, output, and exports. Yet, during the transition period these countries have tended to pass legislation and make "official" systemic changes that leave dysfunctional conditions largely unchanged. Also, even if the new producers outperform the existing former state and collective farms, they might simply represent the best possible management and production practices within the economy's current technological and administrative systems.

Most future productivity gains are likely to come from strengthening vertical ties for production and distribution of output, rather than from real technological or systemic improvement. Strengthening the links in the chain of supply and distribution can reduce waste and improve efficiency. Yet, there is little evidence so far to indicate that the move toward greater vertical integration will result in a more fundamental switch to more advanced technologies of production. Thus, productivity growth in the major NIS grain producers during the next decade is anticipated to be moderate.

In the Balkan countries, farm-level changes during the transition have also not been conducive to major productivity growth. Both Romania and Bulgaria have broken up the large collective farms that dominated agricultural production during the Soviet era. Romania now has about four million

private farms, most of them quite small (average farm size is about 0.5 hectare). Bulgaria's grain production is more mixed, with some large, private farms. The many small private farms in both Romania and Bulgaria suffer from diseconomies of scale. The main grain producers in Serbia are large vertically integrated *kombinats*, which are undergoing a complicated and confusing privatization. Because these countries have not yet established systems of farm structure and management with proven records of productivity growth, their grain producing operations over the next decade are anticipated to show only moderate growth. Thus, in both the NIS and Balkan regions, the effect of productivity growth on grain exports is expected to be only *mildly* positive.

The price competitiveness of Black Sea grain production is also sensitive to changes in input prices, especially for energy. As during the Soviet period, energy use in Russia, Ukraine, and Kazakstan continues to be subsidized, not only in agriculture but throughout the economy. The most important type of energy used in grain production is fuel for machinery (used mainly for planting and harvesting). Subsidization of energy use can be defined as either setting user prices below production costs, or even if domestic user prices equal production costs, charging domestic users prices below world trade prices. Although the first definition holds in Russia and perhaps a few other countries for only a few energy products, the second definition holds in Russia and Ukraine for many such products. For example, in 1999 Russian farms paid about $13 per 1,000 cubic meters of natural gas, while the average export price of Russian natural gas was $57 per 1,000 cubic meters.

In Russia's WTO accession negotiations, WTO members argue that Russia's policy of charging domestic energy users prices below the prices it receives when exporting the energy is a subsidy, which gives its producers (in all sectors of the economy) a cost advantage over foreign competition. These countries are therefore arguing that Russia end this subsidy as a condition for WTO accession. Therefore, in the near to medium term, energy prices faced by Russian grain producers will likely rise closer to world prices. By raising production costs, this development will hurt Black Sea grain's competitiveness and thereby dampen exports.

Consumer income and revival of the livestock sector. Soviet-era imports of grain have disappeared in the NIS region mostly due to the massive contraction of the livestock sector, which has reduced the need for feed grain. Macroeconomic forecasters project GDP in most Black Sea countries to grow during the next decade by 4-5 percent a year. Given that demand for livestock products is fairly sensitive to changes in consumer income, GDP growth should help revive demand for meat and other livestock products, and consequently for feed grain as well. The growing domestic demand for feed could cut into domestic grain surpluses available for export.

If agricultural and food markets in the Black Sea countries are functioning well internally and are well integrated with world agricultural markets, any rise in consumer demand for meat would have little or no effect on grain exports. When domestic and world markets are integrated, domestic producer prices are determined predominantly by world trade prices. Thus, an increase in domestic demand for a foodstuff, such as meat, would 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 Black Sea region are not functioning well, however, the projected GDP growth could significantly raise producer prices and domestic production of meat.

How well integrated are Black Sea countries' agricultural and food markets with world markets? Osborne and Liefert (2004) find that the transmission of changes in world trade prices, and in the exchange rate, to changes in Russian domestic prices for meat products is fairly weak. This weak integration is due to undeveloped physical and institutional infrastructure (such as weak systems of transportation, commercial law, and market information), which segments regional markets and cuts off regional markets from the world market. Other Black Sea countries have made no more progress than Russia in improving their infrastructure for agriculture. Also "separating" regional markets from the world market—to the benefit of regional producers that must compete with imports—are differences in quality and taste between locally produced and imported goods, such that consumers prefer their local products.

Over the next decade, Black Sea countries are likely to improve their infrastructure and integration with world markets. Increased Western investment and the technological/managerial know-how that typically accompanies it (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, infrastructural development is usually slow. With lingering segmentation of regional markets, the anticipated growth in consumer income is likely to spur livestock production, thereby dampening grain exports.

Infrastructure for internal movement of grain. Black Sea grain exporters must compete on the world market with respect not only to the costs of primary (farm) production, but also to the costs of moving grain from the farm to the border/port. The quality of countries' physical and institutional infrastructure therefore affects the Black Sea countries' grain export potential not only indirectly through the livestock/feed relationship (as just discussed), but also more directly by affecting the total cost of making grain available for export.

Except for Hungary, all the Black Sea countries suffer from deficient domestic physical infrastructure for moving grain and other agricultural products (mainly the poor road, rail, and storage systems), which raises internal transport costs. The weak institutional and commercial infrastructure of the agricultural and food economy also raises transaction costs (though Hungary again is an exception, with a stronger commitment to and better implementation of reform). Producers in particular need better systems of market information (where can one sell and at what price?) and commercial laws that protect property and enforce contracts. The payments that must be made throughout the food economy because of extortion and bribery, a consequence largely of the dysfunctional legal system, are an

additional commercial cost and impediment. Both Romania and Bulgaria have many small private farms. Physical and institutional infrastructure is particularly crucial for such vulnerable farms, without which they are cut off from both foreign and domestic markets, and can function only as subsistence producers.

Because of deficient infrastructure, Ukrainian grain farmers in the late 1990s received prices equal to only about 45 percent of the Ukrainian export price, while German farmers received prices equal to 75 percent of the German grain export price (Striewe, 1998). (Post harvest losses are taken into account in determining the real prices received.) By cutting into the share of the full export price that farms can receive, high internal transport and transaction costs discourage production for export.

The problems that Russia and Ukraine have faced recently in moving large grain surpluses to export have reinforced the importance of infrastructure to all the Black Sea grain exporters. In 2002, Russia passed national legislation that could strengthen commercial law economywide. Yet, improving physical infrastructure takes time and considerable expense (whether publicly or privately funded), while improving institutional infrastructure requires not only passing legislation but also transforming the attitudes and behaviors that underpin effective institutions (such as respect for the rule of law). Improving physical and institutional infrastructure in these countries' agri-food economies will benefit grain exporters, but progress will be slow.

Port capacity constraints. The Black Sea countries have port capacity constraints for exporting grain, the main limitation being port-side elevators. The bulk of Ukraine's and Russia's grain exports move through Black Sea ports, such as Odessa (Ukraine) and Novorossysk (Russia). The Balkan countries also face constraints, either in port capacity (such as Costanza in Romania) or in shipping down the Danube (Hungary and Serbia).

The Black Sea countries are committed to increasing their shipping and port capacity for exporting grain. Also, port capacity constraints appear to have been exaggerated, at least for Russia and Ukraine. In 2001-02, sources commonly reported that the Black Sea ports of Russia and Ukraine each had a total annual grain export capacity of only 5 mmt (Interfax). Yet, in September, October, and November 2002, Russian grain exports equaled 1.7, 1.8, and 2.0 mmt per month. One reason for the higher-than-anticipated movement of grain through ports was the use of shortcut methods like direct loading. In this procedure, grain from rail cars is dumped directly into ships' holds without first passing through an elevator. The procedure decreases loading time, but increases the amount of broken grain kernels and reduces traders' ability to control quality (because grain from various sources is mixed). Nonetheless, Russia and Ukraine have been strenuously expanding grain port capacity, which should boost exports.

State policies. An important factor that will affect these countries' policies concerning grain production and trade is WTO membership (or accession negotiations). Of the Black Sea countries, Hungary, Bulgaria, Romania, and Croatia are already members of the WTO, while Russia, Ukraine, Kazakstan, and Serbia have begun accession negotiations.[3] The accession negotiations for agriculture center around the three "pillars" of the Uruguay Round

[3] An issue that will also strongly shape agricultural policies for Hungary is EU membership, while for Romania, Bulgaria, and Croatia the desire to join the EU (Romania and Bulgaria being slated for membership in 2007) will surely influence policy development. The effect of EU enlargement for the acceding countries and for world agricultural markets is examined in the previous report in this series *EU Enlargement: Implications for New Member Countries, the United States, and World Trade*.

Agreement on Agriculture—market access, export subsidies, and domestic support. Since a country's market access policies affect its imports rather than exports, the negotiations that will most impact the acceding countries' status as grain exporters are those on domestic support and export subsidies.

WTO membership requires that countries keep their level of trade- and production-distorting domestic state support to agriculture below a negotiated limit. Acceding countries are expected to ground their bound level of support at levels that existed during a "base period," usually the last 3 years of available data. WTO members are arguing that the base period for determining Russia's and Ukraine's bound support should be some time in the late 1990s, say 1997-99. Over this period, total budgetary transfers to agriculture in Russia (from federal and regional governments combined, as WTO rules require) averaged $3.1 billion per year (Russian Federation State Committee for Statistics, 2001). The transfers equaled 14 percent of agricultural GDP, and about 1 percent of total GDP. Member countries argue that the appropriate level of bound annual support for Ukraine—based on the period 1997-99—would be about $60 million, less than 1 percent of agricultural GDP.

Both Russia and Ukraine argue that it is unfair to require them to base their bound support on recent support levels. During the Soviet period, agricultural support was high, in the form of both administered pricing and budget allocations. In 1990, Soviet budgetary transfers to agriculture equaled about 3.3 percent of GDP. Support to agriculture in Russia, Ukraine, and Kazakstan has fallen steadily throughout the transition period, mainly because of diminishing state finances rather than the desire from a policy perspective to shrink subsidies. Russia is therefore asking to base its bound support level on the period 1991-93, while Ukraine is asking for 1994-96.

In 2001, Russia proposed an initial bound annual support of $16.2 billion, to fall over a 6-year implementation period to $12.9 billion. In 2002, Russia lowered its proposed annual bound support level to $9 billion, still well above the $3.1 billion annual budgetary support figure for Russia over 1997-99. Ukraine is negotiating for bound annual support of $1.38 billion, far above the $60 million proposed by member countries. WTO members argue that basing support on the early 1990s is illegitimate, given that these countries' economies at that time were still as much state-controlled as market-driven.

Russia is also arguing that it be allowed export subsidies, which would be used most likely for grain given the country's aspiration of becoming a major grain exporter. Russia is proposing that its bound export subsidies be based on levels over the period 1990-92, which covers the last 2 years of the Soviet regime (1990-91). It is asking for bound annual subsidies of $726 million, which would then drop over 6 years to $464.7 million a year. Ukraine, on the other hand, has not used any export subsidies during the transition period, and is not negotiating for their use.

An acceding country can negotiate the right to use export subsidies as a WTO member only if such subsidies existed during the "base period" used in its accession negotiations, again typically the 3 most recent years of available data. One would therefore think that the absence of export subsi-

dies over the entire 12-year course of Russia's transition would wholly prevent it from negotiating export subsidies as part of its accession package. In addition, the United States and many other countries are seeking in the new Doha Round of trade negotiations to end agricultural export subsidies for all WTO members.

Yet, even if Russia and Ukraine were to negotiate the right to bind support in excess of current levels, and Russia were also allowed export subsidies, government budgetary limitations could preclude any rise in subsidies or support. On the other hand, projected annual GDP growth of 4 percent over the decade could increase government revenues sufficiently to raise support to agriculture. The effect of policy changes on grain production and exports is therefore likely to be positive rather than negative, though perhaps only mildly so.

WTO accession is also likely to promote grain exports by reducing (if not wholly eliminating) the ability of regional governments in Russia and Ukraine to restrict grain outflows. There are two possible reasons for the restrictions. First, regions want to ensure that local food needs are met. Second, some local officials deliberately create price differences between regions, and then control grain outflows in order to profit by selling to regions where prices are higher. The federal governments of the NIS countries oppose these controls, and their opposition could grow given that the restrictions might also create monitoring and enforcement problems for WTO membership.

A countervailing policy development in Russia, however, will reduce rather than promote grain exports. In spring 2003, the government created tariff-rate quotas (TRQs) for imports of beef and pork, and a pure quota for poultry. (A TRQ allows a fixed amount of imports at a lower tariff rate and unlimited imports at a higher rate, while a pure quota absolutely sets the maximum volume of imports allowed, at a single tariff rate.) The low-tariff quota volume for beef and pork, and pure quota volume for poultry, equaled about two-thirds of the country's import volume of these meats in 2001. The protection afforded by the TRQs/pure quota have raised meat producer prices. From January 2003 to July 2004, wholesale prices for beef and pork in the most meat-expensive regions in Russia rose 33 and 42 percent (Interfax). The price increases should stimulate output, which in turn would raise domestic demand for feed grain. This would cut into the grain surpluses available for export.

Domestic price adjustments. Even if the Black Sea countries are able to increase grain output for export at the farm level, regional restrictions on grain outflows, deficient infrastructure for the domestic movement of grain, and some lingering port capacity constraints could all limit the amount of grain actually exported. If exportable surpluses remain within the country (or even more so within regions), domestic producer prices could fall, perhaps substantially. This has already happened to some degree in both Russia and Ukraine. For example, the price of soft wheat as reported in Moscow's main commodity exchange fell from 3,400 rubles a ton in August 2000 to 2,980 rubles in August 2001, and then to 2,350 rubles in August 2002 (Interfax).

Given that the demand for grain is relatively fixed and therefore not overly responsive to price changes, grain surpluses could require that domestic prices fall by a lot in order for market supply and demand to balance. The consequence, well-known to farmers in the United States and other Western countries, is that successive years of bumper harvests could drive prices down so far that farmers' total revenue is lower than in years when output is less and prices are higher.

Grain producers in the Black Sea countries could respond to falling prices and income by cutting back growing area. In fact, grain area in Russia and Ukraine in 2003 dropped by 11 and 23 percent from the previous year (USDAa). Such a reaction can act as a partial "built-in stabilizer" to the growth in grain production and exports, at least in the short to medium term while impediments to exports persist.

Foreign market conditions. In the last few years, the Black Sea countries have exported grain to many different regions of the world, including the Middle East, North Africa, European Union (especially Italy and Greece), South America (including Brazil and Argentina), East Asia (such as China and South Korea), and even Canada. The bulk of Black Sea grain, however, goes to the Middle East and North Africa (MENA), especially Egypt, Algeria, Saudi Arabia, and Morocco. In 2002, MENA countries accounted for 47 percent of Black Sea grain exports. (Black Sea grain exports to EU countries in 2002 were almost as large as those to the MENA countries, but this was because of abnormally high EU demand. EU grain import quotas imposed in 2003 will preclude such high imports of Black Sea grain in the future.)

One reason that the MENA countries are the main destination for Black Sea grain is simple geography. MENA countries are fairly close to the Black Sea, so the cost of shipping is relatively low. Another likely reason is complementarity with respect to product quality. Much of Black Sea grain is of relatively low quality, compared at least to Australian, Canadian, and U.S. grain. Although some Black Sea grain is high quality, much of it has low protein content and suffers from sprout damage (which occurs because of rain during harvesting) and other problems such as poor cleaning. A commonly consumed type of bread in the MENA countries is flat bread, which does not require high-quality milling wheat. Several MENA countries, such as Saudi Arabia, import much feed barley for sheep and camels. Other countries, such as Israel, import wheat to be used as feed. Thus, MENA countries are willing to accept low-quality Black Sea grain versus more costly grain from OECD countries.

Because of the complementarity between Black Sea grain and MENA demand, any constraints on the growth in MENA demand could constrict the growth in Black Sea grain exports. However, MENA grain demand during the next 10 years should rise by a fair degree. Demand for food grain depends mainly on population growth, and projected annual population growth rates for MENA countries (around 2.0 percent) are well above projected annual world population growth (1.3 percent). Also, as per capita incomes in the MENA countries increase, food demand should switch from staples such as bread and rice to higher value livestock products. The resulting growth in MENA countries' livestock sectors should stimulate

demand for imported feed grain and feed-quality wheat. The stability and growth of the MENA countries as a market for Black Sea grain is demonstrated by USDA's 2004 baseline forecast to 2013 (USDAb). MENA grain imports are predicted to rise at about the same rate as total world grain imports (and even higher than aggregate world grain imports if the large influence of China on the growth in world grain trade is excluded).

Although the EU was a major destination for Russian and Ukrainian grain (especially wheat) in 2002, the EU's potential as a growth market for NIS grain will be constrained by recently imposed EU import controls. In January 2003, the EU imposed a tariff-rate quota on NIS wheat imports of 2.6 mmt at a fixed tariff of 12 euros per metric ton, with above-quota imports at a fixed tariff of 95 euros per ton. The tariff-rate quota does not apply to the Balkan countries, such as Romania and Bulgaria, which have special trade agreements with the EU. Hungary's accession to the EU in 2004 removed any export constraints for that country.

Black Sea Region Likely To Be a Medium-Sized Grain Exporter

The most important factor affecting the volume of Black Sea countries' production and trade of grain is probably productivity growth. Productivity growth would improve countries' cost competitiveness in grain production, thereby moving countries toward a comparative advantage in producing the commodity. Such productivity growth is likely, though at a moderate rather than substantial pace. It therefore appears that those developments having a positive effect on Black Sea exports should dominate those having a negative effect (table 2). As a result, the Black Sea region is most likely to become a medium-sized grain exporter over the next decade.

Empirical support for this conclusion comes from model-generated projections for Russian and Ukrainian grain production and trade to the year 2013. The projections are from an ERS model of the world agricultural economy, the Country-Link System, which generates forecasts for agricultural production, consumption, and trade. The Country-Link System consists of 46 individual country or regional models, all of which are partial equilibrium and dynamic in nature, covering 22 commodities. Results are presented for Russia and Ukraine (table 3), which accounted for about two-thirds of the Black Sea countries' grain production during 2001-03.

The projections model includes assumptions for Russia and Ukraine, which reflect the analysis in this report about the following variables:

- real exchange rate;
- productivity growth;
- consumer income;
- price and exchange rate transmission elasticities, which represent the degree of countries' integration into world agricultural markets; and
- import controls and budget subsidies to agriculture.

Because of the importance of productivity growth as a forecast assumption, results are presented for two scenarios based on differing assumptions about

Table 2—Expected effects of changes in key variables on agricultural trade

Variable	Expected direction of change	Expected effect on grain exports
Real exchange rate	Appreciation	↓
Input adjustments		
Energy prices	Increase	↓
Labor employed	Decrease	↓
Productivity	Increase	↑
Consumer income and revival of livestock sector	Increase	↓
Infrastructure (including port capacity)	Improvement	↑
Policy		
Import controls	Increase	↓*
Subsidies	Increase	↑
Regional outflow controls	Decrease	↑
Grain prices (if export constraints continue)	Decrease	↓
Foreign demand	Increase	↑**

* The "expected" increase in import controls are the meat import TRQs (and for poultry the pure quota) created in spring 2003. The TRQs should raise domestic demand for feed grain, and thereby reduce grain surpluses available for export.

** Although in the short run an EU wheat import quota might reduce grain exports, in the long run growing demand in North Africa and the Middle East would raise exports.

productivity growth—a low-growth scenario and a high-growth scenario. For both Russia and Ukraine, grain yields have fallen since reform began in the early 1990s, especially for Ukraine. For Russia, the low-growth scenario assumes that by 2013, yields rise to the pre-reform level. The high-growth scenario assumes that by 2013 yields both recover to pre-reform levels and increase by an additional average annual rate of 1.5 percent. For Ukraine, the low-growth scenario assumes that by 2013, yields rise halfway to the pre-reform level, while the high-growth scenario assumes that yields recover fully to the pre-reform level.

The projections are compared to average annual levels of production and trade in a base period. The base period used for Russia is 1999-2001 and for Ukraine 1997-2002. The main factor in choosing base periods was finding a recent period of time over which weather conditions were on average "normal" with regard to grain production.

In the low-growth scenario, total grain production for the two countries by 2013 is 114 million metric tons (mmt), 19 percent above base period output. This results in a doubling of net annual grain exports from 4.2 to 8.6 mmt. Since low rather than high productivity (yield) growth seems more likely, the projections support the conclusion that the Black Sea region (led by

Table 3—Projections for grain production and net trade to 2013: Russia and Ukraine

Country/ commodity	Production	Trade*
	Million metric tons	
	Base period	
Total grain	96	4.2
Russia	66	-1.2
Ukraine	30	5.4
Product:		
Wheat	54	2.3
Coarse grain	42	1.9
	Low productivity growth	
Total grain	114	8.6
Russia	74	-0.6
Ukraine	40	9.2
Product:		
Wheat	62	6.1
Coarse grain	52	2.5
	High productivity growth	
Total grain	132	31.8
Russia	87	15.5
Ukraine	45	16.3
Product:		
Wheat	73	19.4
Coarse grain	59	12.4

* Positive (negative) values are net exports (imports).
Note: Base period values for Russia are average annual values for marketing years (July to June) over 1999-2001, while base values for Ukraine are average annual values for marketing years over 1997-2002.
Source: USDAa and authors' calculations.

Russia and Ukraine) could become a medium-sized grain exporting region of around 10 mmt a year.

The high-growth scenario, however, results in grain production for Russia and Ukraine of 132 mmt by 2013, which pushes the countries' combined net grain exports up to 32 mmt. From these results, we can extrapolate that high productivity growth throughout the Black Sea region could result in 30-40 mmt of grain exports a year. Such large exports would strongly affect the world grain market, since over 2000-03 total annual world grain exports averaged 237 mmt.

The projections are based on the assumption that the tariff-rate quotas that Russia created in 2003 for imports of beef and pork, and the pure quota for imports of poultry, remain in effect throughout the projection period. These trade protection measures should stimulate domestic meat production and correspondingly demand for feed. Their effect is to reduce the 2013 projection for Russia's annual grain exports in both the low- and high-growth scenarios by 3-4 mmt. This explains why in the low-productivity scenario, the rise in grain output does not result in Russia becoming a net grain exporter (table 3). If Russia were to eliminate its recently imposed meat

import restrictions, the Black Sea region would become an even bigger grain exporter.

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