

# How Will Reform of the Soviet Farm Economy Affect U.S. Agriculture?

By Alan Barkema

**T**he economic upheaval in the USSR suggests a day of reckoning has come for the Soviet farm economy. Soviet agriculture—like the rest of the Soviet economy—simply does not work. Previous, half-hearted attempts to reform the farm industry have failed. In light of the ringing repudiation of the old-guard coup in August, further reform now seems certain.

U.S. agriculture has an enormous interest in the outcome of events in the USSR. During the past two decades, the USSR has imported millions of tons of U.S. grain to offset the shortcomings of its inept farm economy. The Soviets will continue to import grain as they reform their flawed agricultural system, regardless of the political organization the USSR eventually assumes. But successful reforms will someday reduce Soviet reliance on grain from the United States.

This article examines the vital trade linkages between U.S. farmers and Soviet consumers. The first section reviews the history of the grain trade between the USSR and the United States during the past two decades. The second section shows how inefficiencies in the Soviet agricultural economy have made the USSR dependent on imported grain. The third section considers the failed attempts to correct the flaws in the Soviet farm economy and the need for further reform. The fourth section concludes that a successful reform of the Soviet agricultural economy could sharply curtail the USSR's reliance on imported grain.

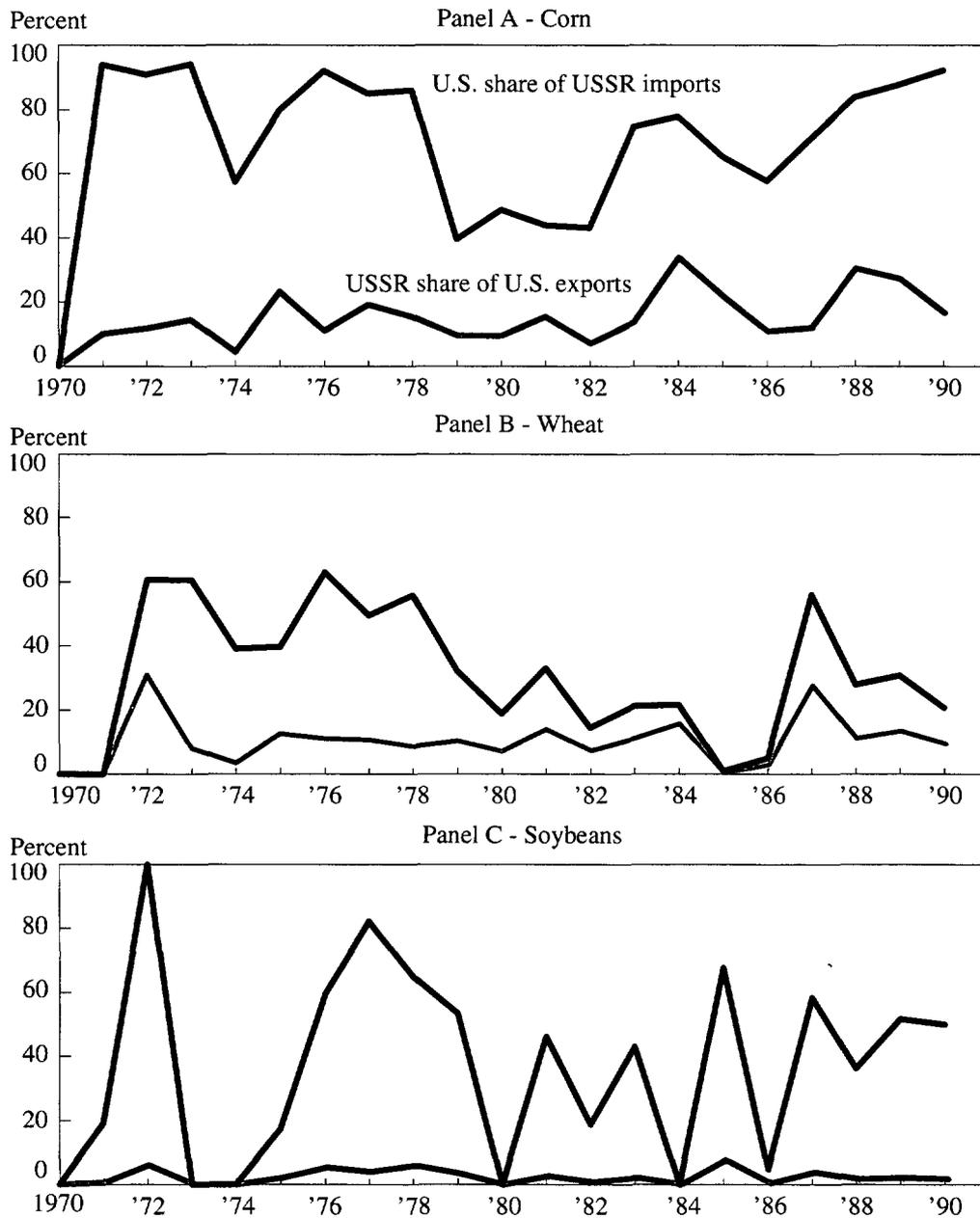
## ***How Important Is Soviet Grain Trade to U.S. Farmers?***

The USSR has been one of U.S. agriculture's leading markets for the past two decades.<sup>1</sup> With the European Community and Japan, the USSR currently ranks among the top three buyers of U.S. feedgrains (mainly corn), wheat, soybeans, and soybean meal.<sup>2</sup>

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Chart 1  
**Grain Trade Between the USSR and the United States**



Source: U.S. Department of Agriculture, Economic Research Service.

Over the past two decades, the USSR has accounted for an average 12 percent of U.S. exports of corn and wheat, and as much as a third in some years (Chart 1).

The Soviets' sudden entry into world grain markets in the early 1970s caught the markets by surprise. Prior to 1970, grain markets in the United States and elsewhere generally heard very little from Soviet grain traders. The Soviets occasionally imported small quantities of wheat while exporting small quantities of coarse grains during the 1950s and 1960s.

The entry had its roots in a 1970 decision by the Soviet government to improve Soviet diets through increased meat and poultry production. An important objective of the five-year plan was to produce more grain to support bigger livestock herds. But the Soviets had a bad grain crop in 1972 that fell well short of the plan's goal. During previous crop shortfalls, Soviet consumers had simply tightened their belts. Under the new policy, the USSR simply turned to world grain markets to bolster the small domestic crop.

Since 1972, U.S. farmers have been the Soviets' chief grain supplier. The U.S. share of this immense market averaged about four-fifths for corn and about half for wheat and soybeans during the 1970s (Chart 1). A surge in grain production in other exporting countries and the 1980 embargo of U.S. grain sales to the USSR cut the U.S. share of the Soviet market in the 1980s.

The enormous Soviet market for U.S. grain has proven to be as unpredictable as it is large. The USSR has bought grain on world markets periodically to make up for shortfalls in Soviet crops. Much of the Soviet grain crop is produced in areas where the growing season is short and moisture is limited. Short delays in planting or harvesting in the harsh climate can cause big changes in the size of the Soviet crop, sending periodic shock waves through world

grain markets (Chart 2).<sup>3</sup>

The most recent cutback in Soviet grain imports occurred in 1990. Exports of U.S. grain to the USSR fell more than half to only 10 million metric tons (mmt), pushing U.S. grain prices down sharply. The decline in Soviet purchases weighed heavily on grain prices despite a drought in the United States that otherwise would have raised prices (Kilman).<sup>4</sup>

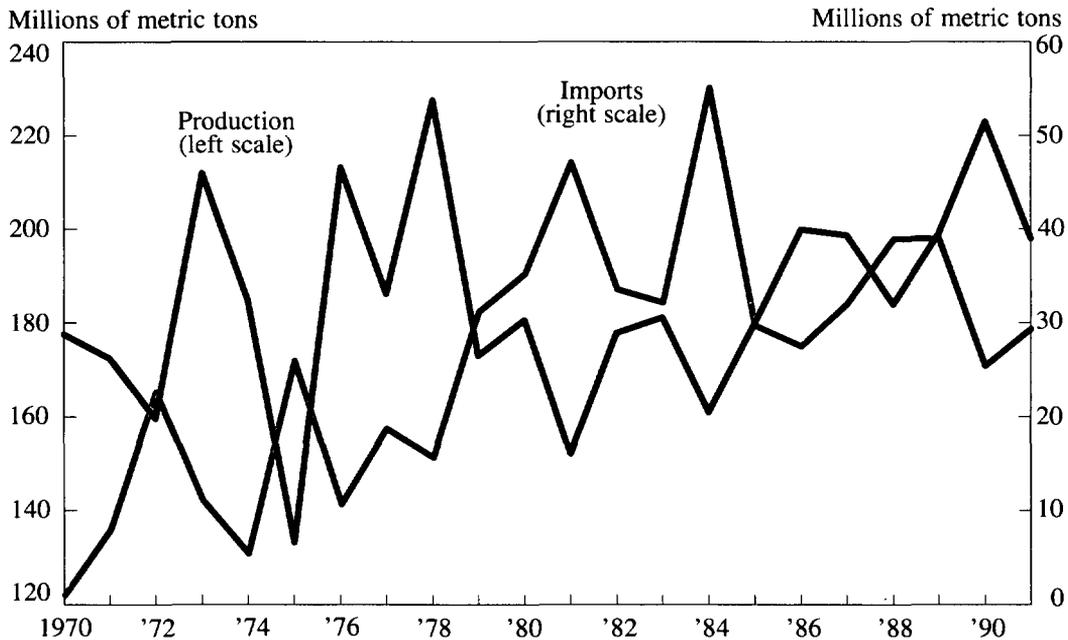
Two factors were responsible for the sharp decline in Soviet grain imports in 1990. First, a surge in Soviet grain production limited the nation's need for imported grain. Exceptionally favorable weather boosted the 1990 Soviet grain crop to more than 220 mmt, the second largest crop on record. Second, dwindling foreign exchange reserves constrained the Soviets' ability to pay for imported grain.<sup>5</sup> In 1990, the USSR's balance of payments deficit increased to more than \$14 billion, up from less than \$4 billion in 1989. The deficit drew down foreign exchange reserves from about \$9 billion to only \$5 billion, enough for only two months of imports.

The USSR's difficulty in paying for imported grain is likely to worsen in 1991. The 1991 Soviet grain crop is expected to fall to 195 mmt, suggesting that the Soviets may need to import 35 mmt of grain (International Wheat Council). At the same time, tightening world grain supplies have begun to raise grain prices, pushing up the cost of the larger Soviet imports. Thus, the USSR will rely even more heavily on credit or outright donations to fill its grain supply gap. The United States has already extended \$2.5 billion in credit guarantees to the USSR to buy U.S. grain (see Box A).

The political and economic upheaval in the USSR, which reached a crescendo with the recently thwarted coup, adds even more uncertainty to the traditionally volatile grain trade between the USSR and the United States. How will the changes in the Soviet economy affect

Chart 2

**Soviet Production and Imports of Grain and Soybeans**



Source: U.S. Department of Agriculture, Economic Research Service.

U.S. farm exports to the USSR in the years ahead? A review of the factors underlying the USSR's need for U.S. grain is an important first step in answering that question.

**What Is Wrong with Soviet Agriculture?**

Soviet grain production falls short of domestic needs because of three main problems in the Soviet agricultural economy. First, farmers produce inefficiently. Second, a dilapidated distribution and processing system wastes farm output. And third, retail food prices are too low. All three problems arise from a common cause: prices are set by the government rather than by a free market.

**Inefficient production**

Soviet agriculture is a backward, labor-intensive industry. Soviet farms employ five times as many people but only half as many tractors as U.S. farms (Table 1, panel a). About 14 percent of the Soviet population work on farms, compared with less than 3 percent in the United States. Overall, nearly a third of the Soviet labor force works in the production, processing, and distribution of farm products, compared with about a sixth in the United States.<sup>6</sup>

Soviet farmers operate the largest cropland base in the world but are notoriously inefficient. Their 230 million hectares (a hectare is about 2.5 acres) of cropland are about a fourth larger

**Box A**  
***U.S. Policy in the Soviet Grain Market***

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The U.S. offer to the USSR of credit guarantees to buy U.S. grain is the latest in a long series of U.S. policy initiatives designed to manage the grain trade between the two nations. The primary goal of U.S. policy in the 1970s, when world grain supplies were lean, was to limit disruptions in U.S. grain markets caused by unannounced raids by shrewd Soviet buyers. But since the early 1980s, when world grain markets swung toward surplus, the goal of U.S. policy has been to boost sales of U.S. grain to the USSR.

***Long-Term Bilateral Grain Agreements***

The U.S. policy initiatives began in 1975 with the signing of the first of three Long-Term Bilateral Grain Agreements (LBGA) between the United States and the USSR. The 1975 LBGA sought to smooth the flow of U.S. grain to the USSR by setting both a floor and a ceiling on Soviet purchases. Soviet purchases could exceed the ceiling only if U.S. authorities were consulted.

Subsequent LBGAs signed in 1983 and 1990 raised both the floor and ceiling on Soviet grain purchases in an effort to boost sagging U.S. grain sales. An embargo of U.S. grain shipments to the USSR from January 1980 to April 1981, which intended to punish the USSR for invading Afghanistan, had encouraged the USSR to seek other sources of grain. At the same time, grain production surged around the globe. As a result, the dominant U.S. share of the Soviet grain market slipped in the 1980s.

***EEP subsidies***

The United States turned to another tool in its policy arsenal, the Export Enhancement Program (EEP), to meet the competition in the

Soviet market in the mid-1980s. The EEP uses a government subsidy to lower the cost of grain (mainly wheat) to selected foreign buyers. The EEP subsidies for Soviet wheat purchases averaged about \$30 per ton from 1986 through 1990, roughly 30 percent of the wheat's value.

***Export credit guarantees***

The United States sweetened the terms of grain sales to the USSR even more during the past year when fierce competition from other exporters threatened the U.S. share of the Soviet market. The United States offered the USSR \$2.5 billion in credit guarantees to buy U.S. grain. The guarantees were extended under the U.S. Department of Agriculture's Exports Credit Guarantee Program, or the GSM-102. Under the GSM-102 program, the U.S. Department of Agriculture guarantees repayment of loans from financial institutions that finance the export of U.S. crops to foreign buyers. The credit guarantees were extended in two increments, \$1 billion authorized in December 1990 and another \$1.5 billion authorized in June 1991.

The Soviets quickly used the first \$1 billion of credit to purchase nearly 5 mmt of corn, more than 2 mmt of wheat, and smaller amounts of soybeans, soybean meal, and other products. The second credit allocation of \$1.5 billion was to be provided in three increments, with \$600 million released in June 1991, \$500 million released in October 1991, and \$400 million released in February 1992. But on August 26, 1991, the U.S. Department of Agriculture announced that \$315 million of the October 1991 credit increment would be released immediately in response to a Soviet appeal for aid.

*Table 1*  
***A comparison of Soviet and U.S. agriculture***

<i>Panel a: Farm resources</i>	<i>USSR</i>	<i>U.S.</i>
Cropland (1,000 ha)	232,426	189,915
Agricultural labor force (percent)	14.2	2.5
Labor per 1,000 ha	91	17
Tractors per 1,000 ha	12	25
<i>Panel b: Crop data (1989)</i>		
Crop production (mmt)		
All grains	201	284
Wheat	91	55
Corn	17	191
Soybeans	1	52
Crop yields (kg/ha)		
Wheat	1,900	2,203
Corn	3,552	7,291
Soybeans	1,129	2,182
<i>Panel c: Livestock data</i>		
Meat production (mmt)		
Total	20.0	28.3
Beef and veal	8.8	10.6
Pork	6.8	7.2
Poultry	3.3	10.2
Feed conversion (kg feed per kg liveweight gain)		
Beef	13.5	7.8
Pork	8.8	4.3
Broilers	4.0	2.0

Notes: Ha = hectares; mmt = million metric tons; kg = kilograms.

Sources: U.S. Department of Agriculture 1990, 1991; Economic Research Service Statistical Bulletin Number 815; Cook.

than U.S. cropland. Yet the Soviet farm system gets subpar yields from its plentiful soil resource. Soviet farmers achieve their best results with wheat, their main crop. They produce more wheat than farmers in any other nation, and in good years, attain yields that rival the U.S. average. Soviet corn and soybean yields, meanwhile, are roughly half the U.S.

average (Table 1, panel b).<sup>7</sup>

The productivity of Soviet livestock herds also trails that of U.S. herds (Table 1, panel c). The leading cause of the lagging productivity of Soviet livestock is a severe protein deficiency in livestock feed. The USSR has relatively few sources of protein for its feed, unlike the United States, which crushes a huge

Table 2

**Investment in Soviet agriculture**

(Billions of 1984 rubles, annual averages)

	<u>1976-80</u>	<u>1981-85</u>	<u>1986-89</u>
Agricultural production	28.6	31.2	35.0
Rural infrastructure	6.1	9.7	12.5
Large-scale irrigation	8.0	8.7	8.9
Agro-industry and storage	5.3	5.2	6.8
Total agriculture	48.0	54.8	63.2
Agricultural share of economywide investment	33.4	32.5	30.6

Source: IMF and others.

soybean crop into high-protein meal. The USSR imports small quantities of soybeans but not enough to make up for its protein deficiency. Thus, Soviet farmers end up feeding their livestock larger quantities of low-quality rations.<sup>8</sup>

Soviet agriculture has continued to falter despite enormous efforts by the government to modernize it. During the 1980s, the government poured into agriculture nearly a third of its total annual investment in the entire Soviet economy (Table 2).<sup>9</sup> The huge farm investment has paid few if any dividends. That failure can be traced directly to two fundamental flaws in the pricing system in Soviet agriculture.

The first problem is that Soviet farm prices provide no information for channeling investments into the most productive uses. Large state and collective farms, which operate about 97 percent of all Soviet farmland, sell most of their output to meet government-set quotas at government-set *procurement prices*.<sup>10</sup> Because these prices are set by the government rather than by markets, they give farm managers no

information on the most profitable or efficient ways to operate their farms. Thus, farm managers make operating and investment decisions based on government directives, rather than on the forces of supply and demand.

The second problem is that Soviet farm prices often reward the most inefficient producers and penalize the most efficient. Procurement prices include a base price plus a bonus determined by production costs.<sup>11</sup> Financially weak farms with high production costs receive large procurement bonuses to boost their financial positions. In contrast, farms with lower production costs receive smaller bonuses. These upside-down incentives simply discourage efficiency.<sup>12</sup>

**Wasted output**

The dilapidated Soviet distribution and processing system wastes an enormous amount of farm output each year, an amount roughly equal to annual farm imports. Estimated losses

Table 3

**Per capita food consumption in the USSR and the United States**

(Kilograms per year)

	USSR		U.S.	
	1970	1988	1970	1988
Potatoes	130.0	99.0	53.0	56.1
Sugar	42.2	50.0	50.3	30.2
Vegetables	79.1	97.2	89.5	103.0
Fruit	38.1	44.3	95.8	125.3
Meat	47.9	69.0	107.9	114.5
Milk	194.4	171.1	245.1	247.4
Eggs	8.8	15.4	18.0	13.9
Fish and seafood	24.4	28.0	14.6	18.0
Calories per day	3,341	3,378	3,384	3,660

Sources: USDA 1990; Food and Agricultural Organization.

after harvest range from 20 to 30 percent for grains and up to 40 to 50 percent for more perishable crops like potatoes and vegetables. Up to 1 mmt of meat is lost each year due to inadequate slaughter, processing, and cold storage facilities.

The huge Soviet grain crop in 1990 simply overwhelmed the crumbling distribution system. An estimated 30 to 36 mmt of grain spoiled due to a lack of functioning farm machinery, railroad equipment, and storage facilities (IMF and others; USDA 1991). Thousands of combines, tractors, and trucks lay idle during harvest due to shortages of fuel, batteries, and spare parts. Poor rural roads limited access to ripening fields, and an overworked railroad system struggled to deliver the crop to storage and processing sites. The huge crop swamped available storage space, some of which was already full of imported grain. Outdated processing technology, dilapidated processing equipment, and shortages of packaging materials contributed to further losses well after harvest.

The stunning losses in the Soviet distribution system are another direct result of government-set prices. Food processors buy raw farm products at subsidized prices. The prices are so low that managers of processing plants pay little attention to farm products wasted during processing. The problem is compounded when food processors sell food products at government-set prices too low to finance any improvements to the distribution and processing system. Instead, the government pays for all improvements. Yet the processing and distribution system receives a paltry 15 percent of the government's total investment in agriculture (Table 2). As a result, nearly two-thirds of the nation's processing equipment, much of which dates from the 1950s and 1960s, is obsolete or worn out (IMF and others).

**Low retail food prices**

Government-set food prices in the USSR are too low. The government pricing scheme

relies on long queues of consumers and empty shelves—instead of market-determined prices—to ration food supplies. The long queues and empty shelves are an obvious sign that demand for food outstrips food supplies.

Contrary to popular belief, consumers in the USSR are not on the verge of starvation.<sup>13</sup> Soviet consumers eat much more meat today than 20 years ago, and they consume as many calories as U.S. consumers (Table 3). Still, the quality of the Soviet diet is low because Soviet consumers derive a larger proportion of their calories from nonprotein sources, such as bread and fat.

Low food prices, which have changed little since the 1960s, cause the long queues and empty shelves at Soviet food markets. Cheap food encourages wasteful consumption that quickly empties shelves. For example, bread has been priced so low that 4 to 5 mmt of bread is fed to livestock each year. Consumers spend countless hours waiting in queues for shelves to be restocked.

Soviet food prices stay low due to a huge government food subsidy. The subsidy makes up the difference between the price the government pays producers and the lower price the government charges consumers. In 1990, the food subsidy was about 18 percent of total government expenditures, exceeding government spending on health and education (Table 4). The subsidy is a leading contributor to the Soviet budget deficit (about 80 billion rubles in 1990), which the Soviets have financed by printing an endless flow of rubles. The flood of fresh currency has accumulated in the “monetary overhang,” a cash horde that consumers cannot spend because food and other goods are unavailable.<sup>14</sup>

The monetary overhang aggravates the problems in the Soviet farm economy. The huge stash of unspendable rubles undermines the currency as a store of value and a medium of

exchange. As a result, farmers and food processors avoid rubles and accumulate larger commodity inventories to use in a growing barter economy. Farmers and processors hoard farm products and then trade them rather than sell to the government for increasingly worthless rubles. The hoarding and widening use of barter worsen the problems of the agricultural distribution system, stretching delivery times, increasing waste, and aggravating shortages.

### ***How Might Soviet Agriculture Be Reformed?***

President Mikhail Gorbachev’s perestroika program has tried many times in recent years to solve Soviet agriculture’s crushing problems. But all of the reforms have stopped short of letting free markets, rather than the government, determine prices. As a result, the reforms have all failed.

*Table 4*

#### ***Food subsidies in the USSR***

*(Billions of rubles)*

	1985	1990	Share of total (%) 1990
Meat	26.6	48.0	50.1
Milk	18.9	31.0	32.3
Fish	2.1	3.1	3.2
Grain	4.4	7.3	7.6
Potatoes	3.0	4.4	4.6
Sugar	1.0	2.1	2.2
Total	56.0	95.9*	100.0
Share of total state expenditure	14.5	18.0	

\* 95.9 rubles were budgeted for 1990. Projected subsidies were 115 billion rubles after procurement price increases at midyear.

Source: IMF and others.

### ***Why have agricultural reforms failed?***

The most fundamental reform the Soviets have tried to date is tinkering with farm and food prices. But the partial price reforms have left prices under government control. As a result, Soviet agriculture is mired in a partly dismantled system of unworkable government controls.<sup>15</sup>

*Higher farm prices.* In 1990, the Soviet government raised procurement prices and eliminated procurement bonuses. The Soviets hoped higher prices would encourage increased production by boosting farm profits. And they hoped eliminating procurement bonuses, which had rewarded farms with high production costs, would rid Soviet farms of a powerful incentive for inefficient production.

The procurement price changes were positive steps, but they have little prospect of spurring production on Soviet farms. The problem is that the new prices, and thus farm production and investment decisions, are still determined by the government rather than by markets. Farmers remain bound to old production patterns and practices by unworkable government plans.<sup>16</sup> In addition, production inputs—from herbicides to spare parts—that are required to boost production remain in short supply and of low quality. Finally, farmers hold a significant share of the nation's monetary overhang and already have more rubles than they can spend. Thus, they are unwilling to boost production in exchange for an increasingly worthless currency.

*Higher food prices.* In 1991, the Soviet government raised food prices sharply. Bread and meat prices have tripled and milk prices have doubled. The Soviets hoped the higher prices would cut the huge food subsidy while rationing food supplies. As a result, shelves in food stores might not empty as quickly, queues might shorten, and consumers might be less inclined to hoard food whenever it appears.<sup>17</sup>

Any beneficial effects of the food price hike will be short-lived, however. Because food prices are still set by the government, they remain below the cost of delivering food to the consumer. For example, the new meat and milk prices are still 30 to 40 percent lower than market prices would be. In addition, the government is considering a plan to compensate consumers for much of the increase in food prices, giving them more rubles to spend on low-cost food. The result would be a quick return to wasteful consumption, hoarding, empty shelves, and long queues.<sup>18</sup>

### ***Why are sweeping agricultural reforms critical?***

Prospects for further reforms in Soviet agriculture are tied to political decisions that will determine the future course of the entire Soviet economy. Events in the USSR are swirling too rapidly to predict those decisions precisely. Still, the stunning rejection of the old-guard coup in August has given new impetus to the forces of change in the USSR.

Two factors make reform of Soviet agriculture critical to reforming the rest of the Soviet economy. First, agricultural reform would free millions of workers and billions of rubles of capital investment for more productive use elsewhere in the Soviet economy. In recent years, agriculture has accounted for about a third of all employment and investment in the USSR. Market reform would boost the productivity of both labor and capital in Soviet agriculture. Fewer workers would be needed on farms. To be sure, additional capital investments would be required to modernize Soviet agriculture. But eventually, a more efficient Soviet agriculture would require a much smaller share of the nation's investment, freeing capital to rebuild other industries.

Second, agricultural reform would

## *Box B*

### *Elements of Economic Reform*

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Determining prices in markets rather than by government edict is the key element for a successful reform of the Soviet farm economy. By guiding food production and consumption decisions, market prices match food supplies to food demand. But moving to a market economy will not be easy.

Well-functioning markets have two basic requirements. First, producers must be free to respond to changing prices. Then they can boost production when rising prices signal that food supplies are tight, and vice versa. Second, producers must be held financially accountable for their actions. Then they are justly rewarded for responding to market signals or rightfully penalized for ignoring them. Both market

requirements are met in a system of private enterprise, where prospective profits or losses encourage accurate business decisions by private business owners.

Efforts to privatize Soviet agriculture must overcome two obstacles. First, farm and business assets, which are now owned by the government, must be distributed to new private owners. At present, no one knows how much these assets—such as farmland—are worth because markets for private property do not exist. Second, the legal infrastructure that supports market transactions, including the ownership of property, must be established. While neither of these two obstacles is insurmountable, both will lengthen the USSR's transition to a market economy.

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eliminate the nation's food subsidy, ease the nation's budget pressures, and help stabilize the ruble. The huge food subsidy (an estimated 115 billion rubles in 1990) is a large contributor to the Soviet budget deficit (about 80 billion rubles in 1990). Monetary policy in the USSR has financed budget deficits by printing rubles, causing a steady decline in the value of the ruble.<sup>19</sup> With its currency in free-fall, the USSR will be hard-pressed to purchase the Western technology it needs to modernize agriculture or other industries. Thus, agricultural reform would help right the nation's macroeconomic imbalances, shrink the monetary overhang, and stabilize the ruble. Then serious efforts to rebuild the Soviet economy can begin.

For any reform of Soviet agriculture to be successful, however, prices must be determined in markets rather than by government edict. Market prices ensure that food supplies are

adequate by rewarding producers for supplying the food consumers want and by encouraging consumers to shop intelligently. In brief, market prices are the communication link between producers and consumers that for decades has been missing in the USSR. By freeing prices from government control and establishing free markets, Soviet agriculture could boost production, curb waste, and eliminate food shortages.

Adopting market pricing requires a sweeping overhaul of the Soviet agricultural economy. All segments of Soviet agriculture—including makers of farm machinery and fertilizers, farmers, and processing plant managers—must be able to respond to price signals if the industry is to supply the kinds and quantities of foods consumers want. Thus, the centralized government control of Soviet agriculture must yield to a new structure of independent, private entrepreneurs (see Box B).

## ***What Are the Prospects for U.S. Grain Sales to the USSR?***

The preceding review of the Soviet farm economy points to some overall conclusions. The USSR will remain dependent on imported grain as it rebuilds its farm economy over the next few years. But agricultural reforms that now seem central to general economic reform will—if implemented—one day cut that dependence.

The USSR's dependence on imported grain will gradually decline as competitive markets and the profit motive encourage greater efficiency in all segments of Soviet agriculture. Improved labor incentives will boost the productivity of farm workers and managers. The quality and availability of seed, fertilizer, herbicides, farm machinery, and other production inputs will increase as the farm supply industry is revitalized. Better rural roads, storage facilities, and an improved distribution and processing system will minimize losses during and after harvest. Food retailers will strive to stock the products their customers demand. Rising efficiency in each of these segments of Soviet agriculture will gradually lessen the USSR's dependence on imported grain.

These sweeping market changes in Soviet agriculture will affect a broad cross-section of U.S. agriculture. Soviet purchases of U.S. wheat will decline. Soviet farmers are already proficient wheat growers, but market reform could boost wheat production by encouraging better management decisions. More timely planting and harvest, in particular, would reduce the impact of harsh climates on wheat yields and the variability in wheat production.<sup>20</sup> Harvest and storage losses would be cut sharply. The result would be smaller and less variable exports of U.S. wheat to the USSR.

Soviet gains in production of forages and other feeds could be even greater than in wheat

production. While Soviet farmers are already adept at growing wheat, they have considerable potential for improving forage production.<sup>21</sup> Gains in forage production could cut demand for imports of U.S. feedgrains (mainly corn), which have been the mainstay of Soviet livestock production for the past 20 years.

Soviet demand for U.S. feedgrains could be trimmed further if Soviet farmers add more protein to livestock rations. Doing so would reduce the total amount of feed the animals consume. The current protein deficiency in Soviet livestock feeds is about 10 to 15 mmt of soybean meal per year (USDA 1991). Soviet farmers may fill part of the protein shortage with increased domestic production of sunflowers and other oilseeds. But part of the protein shortage may be filled with larger imports of U.S. soybeans and soybean meal. In recent years, the USSR has imported only 3.0 to 3.5 mmt of soybeans and meal per year. Thus, considerable expansion in U.S. soybean and meal exports could come at the expense of smaller U.S. feedgrain exports.

A growing market for value-added food products may also partly offset the likely decline in U.S. wheat and feedgrain sales to the USSR. Rising real incomes in a revitalized Soviet economy could boost consumer demand for a wider variety of high-quality, value-added food products. For example, U.S. poultry products are already in strong demand by Soviet consumers. The United States shipped about 138,000 tons of U.S. poultry to the USSR in 1990 and expects to make larger shipments this year. As Soviet consumers acquire a taste for high-quality products that the Soviet food system cannot deliver, Soviet demand for U.S. poultry and other value-added products will grow.

The development of Soviet agriculture may also create a huge new market for U.S. farm and food technology, ranging from improved

genetics for Soviet livestock herds to new food processing plants. Much of the USSR's farm and food technology is either far behind U.S. technology or inappropriate for a new market-based agriculture. Soviet farm machinery, for example, was developed for huge state and collective farms by the government-controlled monopoly (USDA 1991). The machinery is low quality by U.S. standards and too large to be used on smaller private farms.

Outright imports of U.S. technology or joint ventures with U.S. firms would speed the upgrading of Soviet agriculture. The political and economic infrastructure in the USSR must stabilize, however, before U.S. technology will be widely available to Soviet agriculture. Firms from the United States and elsewhere are unlikely to risk sales or investments in the USSR until they are certain that profits can be repatriated.

### ***Summary***

Narrow reforms that retain the old centrally planned core of the Soviet agricultural economy have failed to correct the flaws in Soviet agriculture. As a result, the USSR is certain to rely on world grain markets to fill a widening gap between domestic production and consumer needs in coming years, just as it has

during the past two decades. But the nation may not have the financial wherewithal to buy grain from the United States or anyone else much longer. The USSR's stock of hard currency is already low and its credit rating is sliding. Moreover, world grain supplies have begun to tighten after several years of surplus. The easy credit and cheap grain that bailed out Soviet agriculture in the past, therefore, may be running out. Thus, Soviet agriculture appears to be approaching its day of reckoning. A true, market-based reform of Soviet agriculture is becoming increasingly likely as that day of reckoning draws near and other options dwindle.

The rebuilding of Soviet agriculture is a daunting challenge that will take years to complete. Freeing markets from government control is simply the first critical step. Still, a successful market-based reform of Soviet agriculture would one day shrink the Soviet market for U.S. farm commodities. But a reformed Soviet economy would create new opportunities for marketing farm and food technology and value-added farm products in specific market niches. These new market niches may prove to be more lucrative for U.S. agriculture than earning slim margins on huge volumes of exported grain.

### ***Endnotes***

<sup>1</sup> At this writing, the future existence of the Union of Soviet Socialist Republics (USSR) is becoming increasingly uncertain. Several of the 15 republics that comprise the USSR have already declared their independence. This article uses the expression "USSR" to refer to the geographic region of the 15 republics, regardless of what political or economic structure may emerge among them.

<sup>2</sup> Wheat, feedgrains, soybeans, and soybean meal account for 85 percent of the value of all Soviet imports of U.S. farm products since 1972.

<sup>3</sup> Johnson builds a strong case that the variability in Soviet

crop production would be much less with improved management practices (Johnson and Brooks).

<sup>4</sup> In mid-summer 1991, U.S. wheat prices were a third lower than in January 1990, corn prices were a fifth lower than in June 1990, and soybean prices had languished at a relatively low level since late in 1989.

<sup>5</sup> A sharp decline in Soviet oil export revenues was the main cause of the USSR's shortage of foreign exchange. The USSR is the world's largest producer of oil and the world's second largest oil exporter. Continuing production and distribution problems in the Soviet oil industry, how-

ever, are believed to have reduced the volume of Soviet oil exports by about a fifth in 1990. The decline in oil revenues, in turn, limited the USSR's ability to pay for imported grain and other goods.

The growing shortage of foreign exchange also affected a wide range of other industries in the USSR. According to the extensive analysis by the IMF and others, "While in 1989 a shortage of foreign exchange had already begun to constrain some producers who relied on imported inputs, by the fall of 1990 this was being cited as one of the main causes of industry's problems. The automobile industry was short of cold-rolled steel sheets, the tire industry of critical additives, the furniture industry of imported dyes and lacquers, and the food processing industry of vital packaging materials" (Vol. 1, p. 43).

<sup>6</sup> Seventy percent of the Soviet farm work force and about half of the food processing work force does manual labor (USDA 1991).

<sup>7</sup> Johnson and Brooks found little room for improvement in Soviet wheat yields relative to those attained in parts of North America with similar climate. But yields of feedgrains and forages in the USSR were much less than those attained in North America. A more recent study of the efficiency of Soviet wheat and other small grains production confirms the Johnson and Brooks' analysis. Skold and Popov found Soviet farmers achieved 83 percent of the wheat production possible with the resources that were available. The farmers were much less efficient in producing corn, vegetables, and other minor crops. Thus, improved management practices could boost the efficiency of corn production and other minor crops, even without improving the current resource base.

<sup>8</sup> Johnson succinctly sums up the protein deficiency in Soviet livestock feed, "One important deficiency is the shortage of protein in livestock rations, a shortfall recognized by both outsiders and Soviet specialists. However, those who plan Soviet feed imports have apparently given little consideration to the possibility of reducing feed costs per unit of output by importing more oilmeals and less grain" (Johnson and Brooks, p. 59).

<sup>9</sup> Low interest rates of only 1 to 2 percent for short-term loans and only 0.75 percent for long-term loans have encouraged farm investment. In January 1991, however, interest rates were raised to 6 percent on short-term debt and 9 to 12 percent on long-term debt, rates which are still below the effective rate of inflation. How effective the new rates will be in guiding investment is not clear, however, given a history of lax lending standards and an underdeveloped capacity for credit analysis. The poor financial status of Soviet farms led to the forgiveness of 73 billion rubles of debt in the Soviet agro-industrial complex in

mid-1990, and more debt forgiveness is expected. The IMF and others suggest, "Debt forgiveness has become so commonplace that the banks lending to agriculture have emerged as cash transfer agents for government funds rather than real banks."

<sup>10</sup> On state farms, land and assets are owned by the state, and all workers are employees of the state. The state absorbs profits and losses and provides most investment capital. On collective farms, assets are owned jointly by collective farm members, except for land, which is owned by the state. Labor is provided by farm members. Wages of collective farm members were about a third of those of state farm employees before wage reforms were passed in the mid-1960s. Since then, few differences remain between state and collective farms (IMF and others).

<sup>11</sup> Until recently, procurement prices have been somewhat below world market prices, imposing an economic penalty on Soviet farmers. Comparing Soviet procurement prices with world market prices is difficult, however, due to multiple exchange rates of the ruble. In addition, the penalty imposed on Soviet farmers by low procurement prices has been at least partly offset by low prices of farm inputs and low interest rates on farm debt.

<sup>12</sup> Johnson notes that farm wages also do not provide sufficient incentives for Soviet farm workers. "With the current system of payment for farm work, the farm worker sees little or no relationship between his or her work and the pay received. Consequently, there is little incentive to do any particular job well, to work hard, or to work long hours during busy seasons of the year" (Johnson and Brooks, p. 199).

<sup>13</sup> Shortages of some foods have worsened in recent months with the further deterioration of the nation's distribution system. The consumption of dietary staples, such as meat, milk, and bread, was probably the same in 1990 as in 1989, but consumption of fruits and vegetables probably declined modestly. Consumption may have fallen 8 percent for fruit and 4 percent for vegetables in 1990 (USDA 1991).

<sup>14</sup> Rapid growth in money incomes has also contributed to growth in the monetary overhang. A mid-1980s change in Soviet law, the Law on State Enterprises, reduced enterprise profit taxes, boosting enterprise profits and giving enterprises more control over profits. At the same time, government investment in enterprises remained high. The result was a surge in enterprise liquidity. The increased liquidity was quickly bid into wages, since inputs other than labor were scarce. As a result, money incomes of Soviet consumers have shot up, soaring about 40 percent from 1985 to 1990 (IMF and others; USDA 1991).

According to the IMF and others, the monetary overhang at the end of 1989 was 130 billion rubles held by consumers and 50 billion rubles held by enterprises. Other estimates of the overhang range up to 300 billion rubles (USDA 1991).

<sup>15</sup> The IMF and others study observes, "Attempts to enhance performance under the old system have proved to be counterproductive: central control was reduced but market signals and discipline were not established...The revolutionary opening up of public debate has cast doubts on earlier achievements while exposing the extent of the economic deterioration and creating uncertainty."

<sup>16</sup> Some private farming is allowed in the USSR, but private farming is still a tiny part of Soviet agriculture. The total amount of land in private farms is only 0.1 percent of all agricultural land, and private farms are generally found on marginal rather than highly productive land. New regulations allow for lifetime use of land including the right of inheritance. Still, the sale of land or its use as collateral is not allowed.

<sup>17</sup> The higher prices could cut the food subsidy to only 30 billion rubles in 1991, down more than two-thirds from a year ago. Thus, the food price hike is an important step toward slowing growth in the monetary overhang and stabilizing the ruble.

Other more direct measures to shrink the monetary overhang have been attempted. Last January the government repudiated all 50 and 100 ruble notes, allowing holders to exchange the large notes for smaller notes up to the value of their monthly salaries. The effort was expected to drain cash balances of about 15 billion rubles (IMF and others).

<sup>18</sup> Some carefully targeted financial assistance may be required to offset the financial pain inflicted by higher food prices on financially vulnerable segments of the population, such as the elderly living on fixed incomes (IMF and others).

<sup>19</sup> Marrese points out that Soviet agriculture faces a much larger adjustment to market prices than agriculture in the Eastern European countries. Agricultural subsidies in the USSR had risen to 12 percent of GDP by 1988. In contrast, agricultural subsidies as a percentage of GDP were 4.01 percent in Hungary, 5.8 percent in Poland, 6.27 percent in the Czech and Slovak Federated Republic. Still, the freeing of prices in Soviet agriculture should not set off an inflationary spiral, if monetary policy is disciplined (Marrese 1991).

<sup>20</sup> See endnote 3.

<sup>21</sup> See endnote 7.

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