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Implications of the 1975 Soviet Harvest

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1975 SOVIET HARVEST

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IMPLICATIONS OF THE 1975 SOVIET HARVEST

PRINCIPAL JUDGMENTS

The 1975 harvest was the worst in the Brezhnev era. Grain production fell to less than two thirds of stated needs, with the livestock sector especially hard hit by feedgrain shortages. Despite cancellation of long-standing export commitments to Eastern Europe, extensive purchases abroad, and resort to stringent conservation measures, the regime will be unable to make up the shortfall. Distress slaughtering, already begun, promises to set back Brezhnev's meat production program for some years to come. The GNP growth rate fell from less than 4 to about 2½ percent.

Inside the USSR, the effects of the harvest are only now beginning to show up in consumer supplies. Meat shortages will become fairly widespread before long, and the quality of the national diet is likely to deteriorate by early summer. There will be widespread grumbling in the urban centers and possibly occasional disorders, outside the major cities. Criticism and debate within the regime on agricultural policy can be expected to mount.

Nevertheless, the regime's control mechanisms are adequate to cope with popular dissatisfaction even if malaise becomes pervasive. In any event, existing military programs will not be affected, and military programs would be among the last to be altered in any series of agricultural crises. Nor is the power position of the present leadership likely to be challenged, although Brezhnev's prestige and that of certain of his colleagues can hardly escape some damage.

Another poor harvest in 1976 or 1977, however, could generate domestic difficulties on a scale that would affect regime cohesion. The succession problem would then take on more urgency, and the chances of factionalism would increase as the agricultural issue became critical.

In any event, even if the Soviets manage to cope adequately with the effects of the 1975 harvest, climatic handicaps and the cumbersome agricultural system make it likely that their grain targets over the next five years will not be met. If so, the Soviets will periodically need more than the 8 million tons of imports to which they now have ready access under terms of the US-USSR grain deal. In terms of "leverage," the five-year grain import agreement was an example of the Soviets yielding to US pressure for regularized behavior in the grain market in order to obtain needed supplies. However, unless requirements for US supplies substantially exceed 8 million tons, reliance on the US will normally have only marginal moderating influence on other aspects of the USSR's international behavior:

- Moscow already has assurances that some US grain will be available every year for the next five;
- the Soviets doubt the capacity or willingness of the US Government, given domestic considerations, to impose and maintain effective controls on exports;
- short-term purchases can usually be made from other suppliers as well; and
- over the longer term the Soviets could shift the patterns of their imports toward non-US suppliers.

Another major harvest failure during the next year or two would throw the USSR into acute temporary dependence on foreign grain supplies. In that contingency, Moscow would probably judge it advisable to avoid threatening or highly offensive behavior for a time. And the recurring and heightened need for US grain would be one of the significant arguments in Moscow in favor of keeping US-USSR bilateral relations on an even keel and promoting mutual interests.

But in terms of implications for US policy, the "leverage" inherent in such a temporary dependency is limited. The stringencies that would face the regime are unlikely to be so desperate, nor the extent of US power to withhold goods so great, as to compel the USSR to substantially alter any important element of its domestic or foreign policy in response to outside pressure. Indeed, overt pressure from abroad would probably unify the leadership behind a negative reac-

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tion. If the result were reduced access to foreign grain, the regime would, we judge, be able to maintain control over increasingly disgruntled consumers.

The East European regimes stand to be tested as a result of the 1975 harvest. More than half of their normal grain imports come from the USSR, and these have been cut off for the current crop year, forcing them into Western markets. This phenomenon is likely to recur, probably compelling a reduction in East European imports of Western capital goods (of which the US share is small). Any sharp reduction in living standards in East Europe carries with it a heightened risk of popular disorders, more so than would be the case in the USSR. While the USSR probably will provide some financial assistance to its clients in their time of troubles, it will resist any accelerated redirection of their trade patterns toward the West. This will be a persistent dilemma for both the Soviets and the East Europeans.

As for the USSR's own trade, grain imports will be the main cause of a 1976 hard-currency trade deficit of \$3-5 billion, following a record deficit estimated at \$4.7 billion last year. This will force the USSR to bargain hard for low-interest credits and to sell gold. Some major purchases may be deferred, but the USSR presently intends to continue to increase its imports of high-technology Western products.

I. INTRODUCTION

1. The harvest disaster in 1975 has been the severest test yet of Brezhnev's guns and butter economic policy. This policy has stressed sharply higher rates of growth for personal consumption while continuing traditional high priorities for the military and heavy industry. Rapid expansion of meat supplies and supplies of other livestock products has been the backbone of Brezhnev's consumer program. The urgency of this program has been heightened by a rapid rise in consumer incomes, another feature of the regime's program.

2. In the past five years the regime has expanded livestock herds to attain meat goals quickly, without first ensuring adequate supplies of feedgrains, gambling on an extended period of above-average weather. Massive grain imports following the 1972 harvest shortfall were sufficient to avert substantial herd reductions, but even larger grain purchases in 1975 were inadequate to prevent large-scale distress slaughtering. This has cut deeply into livestock numbers, jeopardizing progress in providing quality foods and probably raising questions in Moscow about the viability of the basic policy.

II. DEVELOPMENTS IN 1975

The 1975 Crop Shortfall

3. The 1975 crop failure was the worst during the Brezhnev period. Farm output fell about 8½ percent. Production of all major crops, which accounts for about two fifths of total agricultural output, suffered from a severe drought during much

of the 1975 growing season (Table 1). Grain production amounted to only about 140 million tons, roughly 50 million tons below the average for 1971-74 and the worst in the postwar period when measured as a deviation from the long-term trend. Output of other major crops such as sugar beets and sunflower seeds—an important source of vegetable oil—was also below 1974 levels. Further, the drought dried up pastures and reduced supplies of forage crops, compounding the shortage of feedgrains.

Immediate Measures

4. Grain production was less than two thirds of needs, hitting the livestock sector the hardest. The regime did everything it could to maintain herds, using such stopgap measures as shipping animals from drought to non-drought areas and feeding reeds, leaves, and other low-grade feed stuffs to starving livestock. Even long-standing export commitments to Eastern Europe, heretofore considered sacrosanct, were canceled to save about 5 million tons of grain. Finally, since June 1975 the USSR is estimated to have contracted for about 27 million tons of foreign grain, largely for delivery during Fiscal Year 1976. In this connection, the Soviets for the first time committed themselves to a long-term grain import agreement with the United States for the purchase of 6-8 million tons per year for the five years beginning October 1, 1976.¹

¹ The terms of the agreement allow for exceptions. The US may sell less than 6 million tons if it declares a shortage. It may sell more than 8 million tons if the USSR need is exceptional and US supplies permit.

Table 1

USSR: PRODUCTION OF MAJOR CROPS

	Annual					Annual	
	Average 1966-70	1971	1972	1973	1974	Average 1971-74	Estimated 1975
----- Rate of Growth (Percent) -----							
Total value of farm out- put ¹	4.5	0.1	-6.5	14.9	-1.3	1.5	-8.5
Crops ²	5.5	-1.2	-10.7	29.6	-11.8	0.2	-10.0
Animal products ³	3.7	1.2	-3.2	4.0	3.5	2.6	-7.0
----- Million Metric Tons -----							
Production of major farm commodities							
Grain.....	167.6	181.2	168.2	222.5	195.7	191.9	140.0
Potatoes.....	94.8	92.7	78.3	108.2	81.0	90.0	88.5
Sugar beets.....	31.1	72.2	76.4	87.0	76.4	78.0	70-75
Sunflower seeds.....	6.4	5.7	5.0	7.4	6.3	6.2	5.0
Vegetables.....	19.5	20.8	19.9	25.9	23.1	22.5	22.5
Cotton.....	6.1	7.1	7.3	7.7	8.4	7.6	7.9
Meat.....	11.6	13.3	13.6	13.5	14.6	13.7	15.2
Milk.....	30.6	33.2	33.2	33.3	31.8	36.6	30.3
Wool (thousand tons).	398	429	420	433	461	436	463
----- Index (1965 = 100) -----							
Livestock inventories (end of year) ⁴	102.6	112.2	112.1	115.3	118.6	114.6	114.7

¹ Agricultural output for sales and home consumption minus farm products used for seed and livestock feed. Price weights for 1970 have been used in aggregating the physical output of crops and animal products (including changes in inventories of livestock).

² Value of food and technical crops less seed but including the portion fed to livestock.

³ Value of output of meat, milk, eggs, wool, and other livestock products less livestock feed and adjusted for changes in herd inventories.

⁴ End-of-year inventories for cattle, hogs, sheep, goats, and poultry weighted by relative liveweight prices in 1970.

A supplemental agreement requires that at least one third of all grain shipped be carried in US bottoms at a shipping cost well above the current world market rate.

5. Despite all these measures and the use of non-strategic grain reserves,² feed supplies have been inadequate. As a result, state and collective farms began distress slaughtering of hogs and

² That is, inventories held as carry-over stocks to minimize the effects of harvest shortfalls. In addition to stocks to cover normal requirements, some unknown quantity of grain is held for strategic purposes, to supply the military forces and the economy with needed food in time of war. When non-strategic stocks are exhausted, the regime authorizes additional imports. We judge that present imports are probably being allocated for consumption and are not being used to bolster strategic reserves, (see Annex C).

poultry by late summer. Scattered sources indicate that private owners also were killing their animals during the fall. Private farmers provide about one third of the country's meat and own over two fifths of the hogs and cattle and about half of the poultry. As a result inventories of hogs and poultry dropped 20 percent and 15 percent respectively during 1975. So far, sheep and cattle have been relatively unaffected. Despite the sharp decrease in the number of animals during the fourth quarter of 1975, meat output did not increase noticeably. Part of the reduction in livestock numbers probably reflects decisions to reduce farrowing and hatching rates in anticipation of reduced feed supplies. In addition, many animals were killed prematurely, and due to the earlier reduction in rations, the normal

slaughter class was underweight—a harbinger of difficulties to come.

Consumer Unaffected So Far

6. In general, the consumer was unaffected during 1975 by agriculture's problems. An inventory of processed foods, coupled with the usual lag between a crop shortfall and a downturn in livestock production, kept enough food in the marketing pipeline. For the year as a whole, per capita food consumption increased 1½ percent and meat consumption was up 1 percent, reaching a record level. Only late in the year, in parts of the drought-stricken area, shortages of some food products—particularly flour and in some cases sugar—were reported. Meat prices rose in the free markets, but this was due not to shortages but rather to higher incomes and greater demand. There was some evidence that by late summer provincial officials were scrambling to line up provisions for their areas in anticipation of shortages. Thus far, there has been less evidence of consumer grumbling and hoarding than in previous bad years.

The Rest of the Economy in 1975

7. After slowing from an average annual rate of growth of 4½ percent in 1971-73 to less than 4 percent in 1974, Soviet GNP growth slumped even further in 1975—to about 2½ percent. The low GNP growth rates during the past two years were due to two successive years of decline in agricultural output. Other sectors of the economy were not visibly affected by agriculture's problems in 1975. Industrial output in particular equaled the average annual rate achieved for the 1971-74 period. The rate of growth in the other principal sectors either maintain the same pace (services and transportation) or fell moderately (construction).

Hard-Currency Crunch

8. Imports of grain cost the Soviets over \$1 billion in 1975, increasing the hard-currency deficit to an estimated \$4.7 billion—a record. The basic causes of last year's deficit were a rapid rise in most categories of imports—up an estimated \$4 billion to roughly \$13 billion—and very little export growth because of the recession in the West. A weak gold market in 1975 induced the Soviets to

borrow heavily in Western money markets, increasing Soviet indebtedness significantly.

III. THE OUTLOOK FOR 1976

9. The main impact of the 1975 crop failure will be felt in 1976. The consumer will be hardest hit, but growth of industrial production and GNP also will be slowed, and the Soviets will continue to carry a large hard-currency trade deficit. Moreover, the USSR's agricultural situation will remain precarious with carry-over stocks of grain depleted, livestock herds reduced, remaining livestock underfed, and output goals dependent on above-average weather.

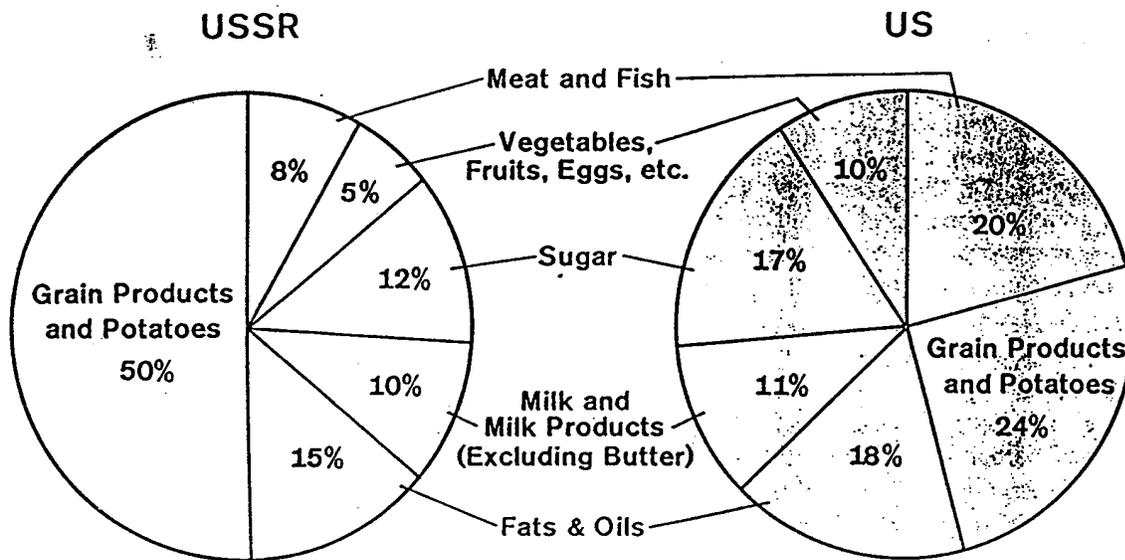
The Consumer Suffers

10. Probably the most serious problem in 1976 will be an expected one-quarter drop in per capita meat consumption. This will return the consumer to the level of the late 1960s. Although per capita consumption of meat has increased 21 percent since 1970, and 48 percent since 1960, the average Soviet citizen still eats only two fifths as much meat as his US counterpart and three fourths as much as the average Pole or Hungarian.

11. In addition, an expected downturn in egg and milk production from 1975 levels, albeit less severe, will further erode the quality of the Soviet diet. This decrease in availability of livestock products will temporarily reverse the steady decline in the share of starchy staples in the average Soviet diet. Bread and potatoes currently account for one half of the calories consumed (see Figure 1).

12. Domestic and imported feed supplies will not be sufficient to support livestock inventories at the 1 January 1976 level. Distress slaughtering of livestock—possibly extending to cattle—will thus occur at least in the first quarter of 1976. Animals will continue to be slaughtered at lighter-than-normal weights. Production of meat will therefore drop off during the first part of the year, and sporadic shortages in certain areas will occur. By spring, herds will be small enough to be supported by seasonal grazing and available feed. Meat production, however, will then be at its lowest level, and prolonged shortages of meat—especially in rural areas—will be common throughout the summer. Even as the 1976 crop becomes available,

Figure 1 **Composition of Diets, 1974**



3250 — Calories per day per person — 3350

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efforts to rebuild the average weight of animals in order to support breeding will keep meat production at depressed levels.

13. The USSR probably will try to import meat in 1976 to augment domestic supplies. Non-US meat supplies appear adequate to permit the USSR to buy at least one-half million tons, equaling estimated 1975 purchases, and perhaps to double that amount. Purchases of one million tons—about as much as available Soviet port and storage facilities could handle—would bolster per capita meat supplies by roughly 10 percent but would add about \$1 billion to the Soviets' already large import bill.

14. Other foods generally should be available. There should be no prolonged bread shortages even though the quality of bread will be lowered—as already seen in some markets—by increasing the extraction rate in milling grain into flour. Distribution failures will produce spot shortages, however, and supplies of flour at retail outlets will be generally limited. The effects of the 1975 shortfall in sugar beet production should be largely offset by stepped-up imports of sugar from Cuba. Similarly,

although output of sunflower seed fell in 1975, scheduled imports of soybeans and the availability of other oilseed crops should be sufficient to avoid vegetable oil shortages.

15. Consumer reaction to the expected meat shortages is difficult to predict. The Soviet people have traditionally accepted programs to build the military and boost industrial production as justifying a slow growth in living standards. Although shortages and price increases stemming from Khrushchev's agrarian policies sparked considerable civil discontent and some rioting in the early 1960s, protests on the scale of the 1970 Polish riots have never been reported in the Soviet Union.

16. The 1976 contraction in meat supplies, however, will be unusually severe. Regime promises have aroused expectations among consumers who themselves have become increasingly aware of higher living standards abroad. Moreover, the regime has done little so far to prepare consumers for the coming shortages. Morale will undoubtedly sag and tensions will grow during the next few months, reaching a peak in late spring and early

summer when shortages of livestock products will be most severe. Disturbances could well occur, especially if an equitable form of rationing—formal or informal—is not enacted. The regime's control mechanisms are adequate for their tasks, but a pervasive malaise is likely.

17. The USSR probably will purchase only limited quantities of additional grain for delivery between January and June 1976, because grain already ordered will largely occupy port capacity of roughly 3 million tons per month. Logistical constraints might be eased to a small degree, however, if grain is transshipped to the Soviet Union via West European ports by rail and coastal vessel. Additional purchases of grain for delivery after June are likely. Prior to October (when the Soviet-US deal goes into effect) Moscow probably intends to buy directly from the US only if it cannot find supplies elsewhere.

Growth in 1976

18. GNP growth in 1976 will be smaller than usual. Even if favorable weather provides a substantial expansion in crop production, growth in overall agricultural production will at best be slight, since both meat output and livestock inventories will be depressed. Moreover, in the aftermath of last year's crop failure, growth in industrial output, investment, and consumption will proceed at record or near record lows.

19. The roughly 9-percent rebound in farm output for 1976 projected in the Five Year Plan appears optimistic even with good weather. Even with the improvement in feed supplies that such weather would bring, production of meat will drop in 1976 and cannot expand substantially until livestock herds are built up again. This takes time—a year or so for pigs, but several years for cattle. Thus the deterioration in the quality of the Soviet diet will persist beyond 1976.

20. The Soviets are planning a 4½-percent rise in industrial output in 1976, the lowest target since World War II. Problems in bringing new plant and equipment into operation contribute to the low goal, but a shortage of agricultural raw materials from the 1975 crop for the food processing and soft goods industries is a principal constraint. Growth in investment is slated to proceed at the slowest

pace (4 percent) since 1968. The Plan emphasizes the reduction of the vast amount of capital tied up in uncompleted investment projects. Meanwhile, the sag in food consumption will not be offset by acceleration in other consumer goods and services.

Foreign Trade and Payments Policy in 1976

21. Grain imports will be the main cause of the hard-currency deficit on the order of \$3-5 billion that we project for 1976. Imports of grain contracted for in 1975 will cost at least \$3 billion or more in 1976, and further purchases could boost Soviet imports another \$1 billion, as these higher grain imports should far outweigh cutbacks in non-grain purchases. Another \$1 billion might be spent for meat. (The five-year grain agreement will not per se affect the USSR's hard currency balance over the longer term since the amounts involved are about what the Soviets would expend in any case.)

22. The size of the 1976 hard-currency trade deficit will depend largely upon Moscow's ability to expand exports to the West, where sluggish economic recovery continues to be a constraining force. The USSR, as a result, may have to resort to substantially more borrowing in 1976. With its solid credit rating, Moscow will have no difficulty in attracting loans, but it would prefer not to pay high interest rates on massive short-term loans, wishing to retain its flexibility in the event of further agricultural failures. In any event, the Soviets will end 1976 with an external debt that is substantially higher—although still within manageable limits.

23. We believe the Soviets will continue to sell gold as they did through most of 1975, despite the decline from the record gold price of \$197.50 per ounce in 1974 to the current level of around \$130. Unless the Soviet hard-currency trade position improves substantially, sales could approximate 200 tons—worth more than \$800 million at today's prices. Moscow could sell even more without disturbing its reserves and probably will if the price is right.

24. While equipment purchases contracted in previous years will keep 1976 imports high, Moscow is apparently reducing its planned cash expendi-

tures. This effort will have little immediate effect on Soviet industrial production because of the long delivery periods for most machinery. We regard current attempts to reduce imports as temporary. There is no indication that the USSR's longer-term policy of increasing imports of high-technology Western products has changed. Because of current hard-currency stringencies, however, the availability of attractive financing will be an increasingly important factor in determining where equipment orders are placed. US firms will be especially affected because US industrial exports to the USSR are financed primarily by high-interest credits. While US Eximbank facilities are desirable to the Soviets, even if they were available US leverage would be limited by continuing Soviet ability to get most, if not all, needed equipment abroad under long-term low-interest credits. Thus current Soviet financial difficulties do not increase US bargaining advantages.

Impact of Another Crop Failure

25. It is premature to predict even roughly the size of the 1976 grain crop. Because spring growing conditions are so important, it will be at least mid-July before reliable estimates can be made. Winter grains normally account for roughly one third of grain production. Unusually low temperatures and inadequate snow cover in December threatened most of the USSR's fall-sown grain crops. Since then, snow cover has relieved the winterkill danger in much of the winter grain area. The areas where pre-winter development of seedlings was severely retarded by the 1975 drought continue to be vulnerable, however. These regions, which usually account for one third of winter grain production, have not yet recovered from last summer's drought. The low soil moisture also will inhibit the growth of lower-yielding spring grains that will be planted to replace winterkilled sowings. Moreover, low soil moisture reserves in several major spring grain areas presage poor sowing conditions in May. More precipitation than normal will therefore be essential for average or better yields.

26. If above-average weather conditions enable the Soviets to harvest considerably more than the roughly 175 million tons of grain needed for minimum domestic requirements (say 195-200 million tons) they can: (a) increase the weight of animals

being marketed, (b) begin the slow process of rebuilding livestock herds, and (c) start to replenish carry-over grain stocks. If the harvest merely meets minimum needs, expansion of herds would be postponed.

27. Another harvest failure would force further large reductions in livestock numbers and additional massive imports of grain from hard-currency areas, worsening the large trade deficit anticipated in 1976. In turn, this might force the USSR to make substantial cutbacks in non-agricultural imports from the US and other hard-currency areas to avoid rapid build-up of foreign debt.

28. The Soviet consumer would face another reduction in meat supplies, erasing the gains made under Brezhnev. As the meat queues lengthened, the leadership would have to decide whether formal rationing should be substituted for the hit-and-miss distribution resulting from the queues. Alternatively, Moscow could raise meat prices to avoid the administrative costs of rationing or the unfairness of a first-come, first-served system. The regime, however, has repeatedly indicated that it will avoid boosting food prices.

29. For the US, another poor Soviet harvest would mean additional grain sales over and above the 6 million tons the USSR is committed to buy from us annually during 1976-80. This would probably lead the Soviets to reduce their purchases and contracts for other Western goods unless foreign demand for Soviet hard currency exports picks up.

IV. LONGER-TERM PROSPECTS

Longer-Term Economic Outlook

30. If average weather prevails over the next few years, GNP should grow by 4 to 5 percent per year. The recently published guidelines for the Tenth Five Year Plan (1976-80) indicate no major shifts in the allocation of resources. The regime recognizes, that while past development relied heavily on rapid growth in the labor force and the stock of plant and equipment, the USSR can no longer sustain "extensive" development of this kind. Instead, the new Plan emphasizes that future growth will depend mainly on "intensive" development—in other words, rapid productivity gains. For the first time in the history of Soviet planning,

outlays for investment are to grow more slowly than GNP—4½ percent versus 5 percent (average annual). Since inputs of man-hours and the stock of plant and equipment are slated to grow at less than three quarters the average rate for 1971-75, the regime is counting on marked efficiency increases in the use of labor and capital. The technical progress required for these gains, however, is not ensured by any new proposals to address chronic problems in the Soviet economy.

- Although one impediment to a speedier introduction of new technology in the USSR is organizational, a more fundamental obstacle is political. Party thinking opposes truly radical changes that might threaten its right of unlimited control, while the ministerial apparatus opposes lesser reforms out of its own bureaucratic interests.
- An alternative source of technical progress—imports of capital equipment from the West—will be crucial for Soviet plans in certain key sectors. Nevertheless—as in the past—the contribution of foreign technology to growth in 1976-80 will not be extensive. Soviet industry is slow to get foreign technology into operation and even slower to spread it throughout a given industry. Moreover, given its reluctance to go deeply into debt, the USSR is unlikely to import enough plant and equipment to make a major impact across the board.
- To achieve even a moderate boost in productivity, the active cooperation of the labor force is needed. Soviet workers, never noted for discipline or motivation, are unlikely to improve their performance in the face of a slower growth of personal consumption.

Soviet Need for US Grain

31. Even if the grain harvests in the next several years are average or moderately above average, the Soviets will have to import from the West more than the 6-8 million tons per year stipulated in the US-USSR grain agreement. If the Soviets needed as much as 25 million tons per year, they could be expected to first take the 8 million tons from the US and exhaust non-US supplies of 10-15 million tons and then return to the US for their remaining needs. The demand for US grain depends on the

size of the Soviet requirement and on production prospects in supplier countries; both conditions are impossible to predict accurately. Particularly over the longer term—and especially of the US-Soviet agreement were abrogated or not renewed—the US share of the USSR's grain purchases could be considerably reduced if the Soviets are willing to develop the markets of smaller exporting countries. The Soviets could shift the pattern of their imports toward non-US suppliers, perhaps with the help of long-term contracts with Canada, Argentina, or Australia. These countries are amenable to such contracts with the Soviets at world prices.

32. How will Soviet foreign policy be affected by the USSR's reliance upon the US for grain imports? While its chronic agricultural problems will exert some moderating effect on Soviet calculations about adventurist foreign activity, Moscow probably believes that it need not take this factor into much account in specific situations, reasoning that:

- it is already entitled to buy up to 8 million tons per year;
- US ability to exert leverage is limited, since US farm and free trade interests will oppose any attempt to limit sales—by, for example, the maritime unions—in reaction to unwanted Soviet behavior, and any governmental controls are likely to be short-lived;
- in the short run, other countries will provide additional amounts;
- over the longer run, the Soviets could expect to shift the pattern of their imports toward other suppliers; and
- in extreme circumstances, substantial belt-tightening is possible, and this is the likely reaction of the leadership to overt foreign pressures.

Soviet behavior to date on such particulars as Jewish emigration and Angola suggests that the leadership feels no need to accommodate US concerns because of its current reliance on US grain. At most, these imports supplement the other interests which commend to the USSR the posture of detente and attempts to improve bilateral relations with the US along the lines of recent years. Thus the theoretical US advantage will be difficult to

apply in practice without arousing an obdurate Soviet backlash.

33. But matters could get worse for Moscow. A disastrous harvest in 1976 or 1977 would create import needs that only the US could satisfy. On occasions when the USSR wants to exceed the 8 million ton level of the five-year agreement, it will probably judge that it should avoid threatening or highly offensive behavior in other arenas for a time. And if the bilateral detente relationship came under serious challenge, either in the USSR or in the US, the advantages of the grain arrangement would be one of the significant arguments in Moscow in favor of keeping that relationship on an even keel and promoting mutual interests. In sum, we judge that Soviet reliance upon US grain imports will normally have only a limited moderating effect on the USSR's international behavior but that it will have a greater effect in times when the economic situation is parlous or the bilateral relationship is threatened.

Longer-Term Outlook for Agriculture

34. With the exception of livestock goals, plans for agriculture have not been revamped in the wake of the 1975 harvest. Previous harvest failures have usually resulted in plans to increase the emphasis on agricultural inputs, but these are currently scheduled to grow at sharply reduced rates in the next five years. The main features of the plan were probably worked out some time ago, perhaps as early as 1974, when a 35 billion ruble program to upgrade the non-black soil zone was unveiled. At that time, planners were euphoric following two record years for agriculture, and evidently hoped to live off the benefits of a decade of very large expansion of agriculture resource base.

35. This planning lag seems to be the reason why investment in agriculture is now planned to grow at an average annual rate of only 3½ percent (Table 2), while the rate of increase in the other sectors of the economy is planned at 5 percent. At these rates, agriculture's share of total investment would slip slightly in 1976-80 although continuing to soak up somewhat more than one fifth of total investment.

36. We suspect that the modesty of the goals for additional resource allocation to agriculture stem

Table 2

USSR: SELECTED INPUTS IN AGRICULTURE 1966-80

	Average Annual Rates of Growth (Percent)		
	Actual		Plan 1976-80
	1966-70	1971-75	
Total Investment	9	10	3½
Deliveries of:			
Tractors	7	2½	1
Trucks	14½	11½	2
Agricultural Machinery ..	6½	13	6½
Delivery of Fertilizer	11	10½	9½

from the unwillingness of the leadership to sponsor grand new programs until the full effect of the 1975 harvest shortfall can be assessed. However, some short-run adjustments are likely. Already, some republic leaders are questioning the planned pattern of investment for farms, specifically, the wisdom of continuing to build large-scale livestock complexes without first ensuring an adequate feed base. In addition, some middle-level planners, who last spring wrote bullish articles about farm achievements during the past decade, have recently changed their tune and now stress that agriculture will continue to need the help of other sectors in order to move ahead.

37. Although some adjustments will probably be made, Moscow's choices during the next five years are few. The regime is already encouraging agriculture's private sector to produce more. About one quarter of total agricultural output, including one fifth of the crops—mostly potatoes, fruits, and vegetables—as well as one third of the livestock products, comes from private producers. The long-run policy toward this sector has been constrictive, but restrictions have been temporarily relaxed after bad harvests. In the past, output in the private sector has been easily spurred by supplying more livestock and feed to individuals, reducing taxes, lowering barriers to the use of public lands, and allowing some urban residents to own livestock. The current leadership is familiar with this process; when farm production stagnated in 1965, the Brezhnev regime immediately turned to the private sector. Private livestock holdings rose 13½ percent in that year, and by 1966, total acreage and livestock holdings in the private sector were up 7½ percent

and 15 percent, respectively, from 1964 levels, while output increased 7 percent.

38. Currently planned investment is largely designed to save farm labor. If the Soviets shifted over now to emphasizing increased output, they might transfer some resources, for example, from construction of automated livestock feeders to production of traditional agricultural machinery. But in order to increase substantially the deliveries of agricultural machinery a complex changeover to a second shift or addition of new production capacity would be required. Given lags in construction and commissioning of new capacity—as well as the competition from similar projects such as the Kama truck plant and the Baikal-Amur mainline railroad for funds to buy capital equipment—building would have had to start years ago in order to bring this capacity on line during 1976-80. No program was started.

39. Planned farm output goals for 1976-80 can not be achieved without better-than-average weather during the next few years. Grain production plans have not been revised. Production must significantly exceed the 1950-75 trend in order to meet the five-year plan target for an annual average grain harvest of 215-220 million tons. The frequency of weather-related crop shortfalls in the past—notably 1963, 1965, 1972, and 1975—suggests that one or perhaps two of the next five years will be unfavorable, making fulfillment of the grain production plan unlikely. (Annexes A and B discuss the fundamental reasons for Soviet agricultural difficulties and the USSR's technological efforts to overcome them.)

40. Meat output targets have been altered but remain ambitious. The five year average for meat production is slated at about 15½ million tons, slightly above the level achieved in 1975. Given the 1975 setback—which we estimate will result in 1976 meat production of about 12 million tons—this will require a staggering 12-percent average annual increase in meat output during the remainder of the five-year plan period. With domestic feed supplies questionable, the Soviets will be forced to rely on continuing substantial imports of grain to meet the plan for livestock products.

The Political Outlook

41. On the political front, effects of the 1975 harvest disaster have not yet surfaced. The weather rather than individuals has been blamed for current economic problems, although the possibility remains that a scapegoat will be offered up from the second echelon of leaders. Characteristically, the Brezhnev regime has allowed little public discussion, let alone debate, about causes and remedies for its farm problems and doubtless intends to hold to this course at the Party Congress in February.

42. Nevertheless, questions about agriculture's priority and administrative organization have long stirred disputes among the Soviet leadership. Periodic stimulation of the private sector has been necessary but remains ideologically unpalatable. Some leaders surely feel that a weaker resource commitment to agriculture exposes the country to unnecessary risks. Others in the regime may be convinced that projected allocations for agriculture will sustain rapid increases in output with the return of normal weather. If there is another crop failure in 1976 or 1977, established agricultural priorities and perhaps even organizational forms would be challenged. Great pressures would be generated for immediate and large remedial programs for agriculture.

43. The senior echelon of the Politburo—Brezhnev and those of his age group—are sufficiently well entrenched to survive the 1975 harvest. But this group's record on other policy fronts is mixed, and its cohesion is likely to weaken as age takes its toll on individual members in the next several years. A bumper harvest in 1976 would repair its reputation, but conversely another failure, following on a spring and summer of exasperating shortages, would further reduce its prestige and probably its cohesion as well. These circumstances would lend more urgency to the succession process in Moscow and also, by posing the agricultural issue in a critical form, increase the chances of factionalism and competition in that process.

V. IMPACT ON MILITARY PROGRAMS

44. In the past, no slackening of key military programs has been noted following crop failures. The poor harvests of the early 1960s occurred in the midst of the first major build-up of Soviet stra-

tegic weapons. Similarly, the poor harvest of 1972 came at a time when the Soviets were preparing a number of new strategic missiles for production and deployment, and there is little to indicate these efforts were affected.

45. The Five Year Plan suggests that the military establishment will remain insulated from the effects of last year's harvest. The resource commitment to agriculture appears weakened if anything, with growth in investment in farm machinery down from its former rapid pace. Although the available data do not permit precise estimates of defense outlays, it appears that the plan allows for a rise in expenditures for military and space programs.

VI. IMPLICATIONS FOR EASTERN EUROPE

46. The Soviets normally supply roughly half of Eastern Europe's grain imports. As crop conditions deteriorated last summer, the USSR canceled grain deliveries to these clients, forcing them to seek grain in the West. As a result, East European grain imports from the West in FY 1976 probably will be on the order of 10-11 million tons, well above the average of recent years. Some 7 million tons are likely to come from the United States. Moscow's cancellation of deliveries has raised doubts in some East European countries concerning Soviet reliability as a future source of grain, giving them additional excuse to shift economic arrangements from East to West. Poland, for example, tentatively arranged with the US in late November for annual imports of possibly 2-3 million tons of grain for at least the next five years. The Czechs and East Germans, the other major grain importers in Eastern Europe, may try to make similar arrangements with Western suppliers.

47. Despite the fact that Moscow has been taking a generally tough line in its economic dealings with Eastern Europe, it will have to be careful not to push its allies too hard to gain short-term relief for itself. The East Europeans are already suffering from the impact of Western inflation and Soviet price hikes, and in most countries the people have been told that some belt-tightening is in order. Indeed, some shortages of consumer goods have already been reported, as have instances of increased consumer grumbling. In this atmosphere, it is unlikely that the East European regimes will

allow shortages of basic foods to persist or to spread at a time when they are under strong economic pressures to raise the prices on some consumer goods.

48. We do not anticipate major shifts in economic priorities that would permit the East European regimes to maintain their recent impressive growth rates of living standards, despite their recently reiterated public commitments on that score. We expect instead a continuing "consumer alert" by the regimes, with reactions to potential or actual disruptions tailored to the immediate problem. Reactions thus far have followed this pattern. In February and June 1975, for example, when demonstrations occurred in Poland over meat shortages, Party leader Gierek reacted by importing more meat and by drawing down stocks slated for export to the West. Similarly, Romania's Ceausescu in October 1975 ordered a speed-up of deliveries of food and consumer durables to distribution centers, following reports of consumer resentment over shortages in a number of areas.

49. The need to pay hard currency for grain normally imported from the USSR will further strain the balance of payments of the importing countries—mainly East Germany and Poland. Such imports will not be a major element in the region's overall hard-currency deficit in 1976, however. The cost of additional deliveries of grain is estimated at about \$500 million in 1976, but the total deficit in that year may well match the record 1975 deficit of \$7 billion. The reasons for the deficit in 1975 and the anticipated 1976 deficit are poor export performance resulting from a) the Western recession and the diversion of some exports to the USSR to pay for higher priced Soviet commodities and b) substantial imports of Western capital goods, many of which have price tags increased by the inflation in the West.

50. With another large deficit expected in 1976, the Eastern European countries might opt to substantially reduce imports of capital goods from the West. There is little evidence of this happening to date. The regimes will strive to avoid this, since in the longer run a major reduction in such imports would jeopardize growth in Eastern Europe. Some shift away from capital goods in favor of larger supplies of agricultural commodities and

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raw materials from the non-Communist world is possible, especially if the Eastern Europeans believe that they cannot depend on the USSR for the latter. It is unlikely, however, that the Soviets will permit any accelerated redirection of East European trade toward the West. This will be a persistent dilemma for both the Soviets and East Europeans.

51. A shift to the West for imports of agricultural commodities could mean larger US sales, depending on East European preferences for suppliers. Since the US is not a major supplier of capital goods to Eastern Europe, any associated cutback in this category of imports would have little effect on US exports to Eastern Europe.

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Annex A

AGRICULTURE IN THE SOVIET UNION

1. Agriculture in the USSR faces severe environmental limitations. Because three fourths of the sown area is climatically comparable to the Prairie Provinces of Canada and the Northern Great Plains area in the United States, the farmland of the USSR is less productive on the average than that of the United States. Even with a larger area (210 million hectares/520 million acres) under crops, production is less. Moreover, although like these North American regions the USSR has had a long history of wide cyclical swings in weather conditions, the fluctuation in Soviet grain yields is considerably greater. Improved farming practices, which have dampened such fluctuations in North America, have not been adopted in the USSR.

2. As in analogous areas in North America, the Soviet Union's agricultural land is relatively lacking in adequate amount of heat, moisture, and nutrients. More than 30 percent of the USSR is too cold for agriculture, and an additional 40 percent is so cold that only hardy, early-maturing crops can be grown. Only in the southern USSR does the available warmth permit a wide range of crops.

3. Moisture deficiency is also a major problem. Although drought-resistant varieties of plants are being developed and dry-farming techniques improved, the most effective response to moisture deficiency remains the age-old technique of irrigation. However, irrigation requires large amounts of both capital and labor, and in some areas benefits are difficult to sustain because of soil deterioration.

4. The Soviet Union has some comparatively good soils, but natural soil fertility supplies only a part of plant nutrient requirements. Good matching of soil and crop, skillful crop rotation practices, and large quantities of organic and mineral fertilizers and of trace elements are necessary.

5. Not only are there differences between the environmental and technological resources of the United States and the USSR; institutional differences are also vast. The collectivization of agriculture in the USSR has resulted in the division of farm organization into two sectors—the socialized sector, which consists of state and collective farms and which accounts for three fourths of agricultural production; and the private sector, which consists of small private garden plots that account for the remainder of total farm output. The socialized sector is chronically afflicted with lack of motivation and responsibility.

6. Soviet agricultural output was about 70 percent of the US level in 1960. Since that time the dollar value of Soviet output has increased by about 35 percent and by the early 1970s stood at about three fourths of US production. However, Soviet farm output is still dominated by breadgrains and potatoes—the USSR normally produces about twice as much wheat as the United States but only 7 percent as much corn—while output of higher quality foods, particularly meat and fruits, lags far behind that of the United States and is patently inadequate to satisfy the growing demands of the Soviet consumer.

7. Agricultural production is generally sufficient to provide consumers with enough to eat in terms of daily calories, but their diet is heavily weighted with starches and deficient in meat, vegetables, and fruit. Per capita consumption of meat and other quality foods in the Soviet Union is still markedly less than in other industrialized countries. As disposable incomes increase on an already determined schedule, consumer demand for meat rises about proportionately. Production of meat and other livestock products has not yet kept up with this grow-

ing demand, and shortages are endemic. Imports of agricultural commodities even during years of abundant harvests indicate the determination of the leadership to upgrade the Russian diet.

8. The USSR employs a farm labor force more than eight times the size of that in the United

States on 50 percent more cultivated land. But in the USSR one farm worker feeds seven, while in the United States he feeds 50. The USSR maintains more than one fourth of its labor force in agriculture, by far the largest share among industrialized nations; the United States employs only 5 percent of its labor force in agriculture.

Annex B

PROBLEMS IN SOVIET AGRICULTURAL TECHNOLOGY

1. Basic weaknesses in agricultural management and organization are being compounded by a lack of success in fields of importance to any real and lasting advances in agricultural productivity, especially:

- The assimilation of foreign agricultural technology.
- The development of new wheat and other crop varieties.

Agricultural Technology

2. Although agriculture's share of total investment will not change significantly during the present Five Year Plan, total spending will rise by one fifth. Part of the money will be spent in the West, particularly the US, to pay for a wide variety of advanced agricultural technology and equipment. Large amounts will be spent on developing improved varieties of crops, on improved fertilizers and methods of application, on other agricultural chemicals, on soil conservation and moisture retention, and on irrigation and drainage projects. Highest priority will go to machines for growing, harvesting, storing, and processing crops, mechanical and engineering aspects of large-scale animal operations, fertilizer plants, and the technology and equipment needed for huge irrigation and drainage projects.

3. Major agricultural items already delivered, or in the process of being acquired, include:

- Technology and equipment for self-propelled forage harvesters at an estimated cost of \$450 million, plus a factory capable of producing 20,000 such machines per year.
- Technical assistance, licensing agreements, and plants for the production of tractors and trucks based on US models.

— Up to 40 manure recycling complexes incorporating a new process for the production of an urea-based animal feed.

— Fifteen alfalfa processing plants, worth \$2 to \$3 million each, with licensing rights to build an additional 100 to 200.

— A number of prototype feedlots, which will then be duplicated on a large scale.

— A 20-year, \$20-billion deal involving plants for the manufacture of ammonia and phosphoric acid.

— Licenses and technology for the construction of chemical complexes to produce US trade-name pesticides.

— A wide range of US technology and equipment for a multi-billion dollar land reclamation program with emphasis on irrigation.

4. Improvements in Soviet agricultural technology will be slow. The USSR's record on the assimilation of foreign technology has not been good. Insufficient autonomy and incentives for farm managers and workers and inefficient administration of farm research will continue to be significant impediments to any dramatic improvement in Soviet agricultural output.

Wheat Problems

5. The Soviets normally produce roughly one fifth of the world's wheat, as much as twice the US output, but they still suffer from a shortage of high-quality wheat. The inadequacies of the varieties available:

- Keep down the yields the Soviets might otherwise achieve through greater use of fertilizer, mechanization, drainage, irrigation, pest control, and other improved cultivation practices.

- Slow the rate of yield increases and thus limit the Soviet ability to produce the quantities of grain needed for livestock, a key factor in the Kremlin's pledge to provide more meat, milk, and eggs.
- Contribute to wide fluctuations in the Soviet harvest and cause major disturbances in world grain markets.
- Make it difficult to produce good-quality bread, still the mainstay of the Soviet diet.

6. The increased use of fertilizer, coupled with the emergence of new types of rust, have created a need for new varieties with added characteristics. New varieties are needed with germplasm different from present varieties to reduce the risk of large-scale damage from rust, to respond more vigorously to the application of fertilizer, to resist lodging and shattering, and to provide more resistance to other diseases and insects. Soviet scientists, gambling with shortcuts, have not succeeded in developing any new varieties in the past decade.

7. Although Soviet geneticists have tested a wide range of US and other foreign varieties, none has met the special Soviet growing conditions and requirements, except on a very limited scale.

8. A proper breeding program should develop a set of several varieties, with different genetic histories, each set capable of substituting for one of the present widely grown varieties over a wide area and of outproducing it in some areas. But even if such varieties are now being tested in ex-

perimental stations, no major improvements could occur for at least several years; if genetic crosses from among the wide range of genetic materials collected from all over the world need to be made, more than a decade could be required.

Grain Harvesting and Storage Losses

9. The Soviets perennially experience losses of grain during harvesting and storage. Reports indicate that Soviet grain harvesting combines probably operate with no less than a 10-percent grain loss, and losses could range as high as 20 percent. In comparison, US combines are capable of operating with losses as low as 1 to 3 percent. The excessive losses of grain which the Soviets incur during harvesting reflect in part fundamental shortcomings in the design of their combines. Inadequate equipment and harvesting methods not only cause losses of grain but also increase the costs of harvesting.

10. In the USSR, in bumper years, a large quantity of newly harvested grain has to be stored temporarily outdoors in uncovered piles because grain handling, drying, and storage facilities are inadequate. An estimated 35 million tons were temporarily stored in the open in 1973. Under Soviet climatic conditions as much as 40 to 60 percent of freshly harvested grain contains excessive amounts of moisture and other extraneous materials that must be removed quickly if spoilage is to be avoided. Inadequate storage conditions thus reduce the quality as well as the amount of grain.

Annex C

SOVIET GRAIN BALANCE

1. The increase in Soviet grain production since 1960 has not matched the rising demand for grain. The result has been an unprecedented level of grain imports in recent years. Even with these imports, it is very doubtful that the USSR has been able to add to grain reserves. Indeed, all evidence—albeit circumstantial—suggests that substantial reductions in reserves have occurred over the past few years and that current imports are being used to meet needs rather than to pad stocks.

2. Close examination of Soviet data permits a partial reconstruction of a grain balance relating domestic production, net imports, and major components of consumption. Although the USSR reports grain production, it does not release information on the main uses of grain, the amounts lost in transportation and storage, or the size of stocks. Sufficient data exist to make reliable estimates of Soviet use of grain for seed, food, industrial products, and net imports. Data on which to base estimates of grain fed to livestock—which in 1975 will amount to two thirds of the domestic crop—are much less satisfactory; these are far less accurate than estimates for other uses. While the data do not permit us to make estimates of the size of grain stocks, they are believed to be sufficient to detect significant shifts in grain allocation.

The Supply of Grain

3. *Production:* Grain production in the USSR increased more than 75 percent between 1960 and the record harvest year of 1973. The increase was partly the result of better seed varieties, improvement in planting and harvesting practices, the use of more fertilizer and farm machinery, and a 10-percent increase in sown area. The overall trend in output has been obscured by large year-to-year changes. For example, the crop in 1973, a year of favorable weather, was three-fifths larger than the drought-stricken 1975 crop.

4. As production has climbed, its composition has changed; in particular, feedgrains have received far greater attention.

- Barley, the share of which rose from 13 percent of total production in 1960 to 28 percent in 1974, has been stressed because it generally has higher yields than other grains.
- Oats and corn, which fell into disfavor earlier, are making a comeback.

Nevertheless, traditional breadgrains still account for nearly three fifths of production.

- Wheat, lower-yielding spring wheat and higher-yielding winter wheat, comprises about one half of total grain production. Although wheat is used primarily for food, as much as one third of the total wheat crop has been used as livestock feed in recent years.
- Rye remains important because of the Russian fondness for rye breads.

Imports

5. Soviet grain imports have ranged from negligible amounts in the early 1960s to an estimated 24.7 million tons in FY 1976. For data on yearly imports and exports since FY 1972, see Table C-1.

Table C-1

USSR: GRAIN TRADE
FY 1973-FY 1976

	Thousand Metric Tons			
	FY 1973	FY 1974	FY 1975 (est.)	FY 1976 (est.)
Imports.....	22,900	10,960	5,690	24,700
Exports.....	5,331	6,988	6,000	1,500
Of which:				
Eastern Europe....	3,205	3,546	3,000	500
Cuba.....	353	369	350	350
Vietnam.....	167	438	400	100

Demand for Grain

6. The demand for grain has grown rapidly in the USSR as a result of a moderate increase in its use for food and a sharp expansion in its use as livestock feed. Indeed, growth in demand has out-paced production in recent years.

7. *Food:* The USSR produces ample grain to feed its population. Even in years of harvest failure, such as 1975, food requirements consume less than one half of total production. In the bumper harvest year of 1973, only one fourth of the grain (60 million tons) was used as food.

8. *Industrial Raw Materials:* One to two percent of the grain crop is used by industry to make alcohol, beer, starch, and syrup.

9. *Seed:* Each year, 24-28 million tons of grain are used for seed. Improved yields have lowered the share of the crop set aside for seed from about one fifth in the first half of the 1960s to one seventh in the 1970s. We estimate the quantity of grain required for seed from the area planted and the officially recommended seeding rates. These "norms" vary according to the type of grain but seem high compared with Western practice. Fluctuations in the amount of grain used for seed result partly from minor shifts in cropping patterns and partly from the varying amounts of reseeding necessary each year because of winterkill.

10. *Exports:* A small and declining share of Soviet grain is exported. Wheat accounts for the bulk of exported grain, and most of it goes to Eastern Europe and to Cuba. The Soviets have apparently decided that exports to Eastern Europe, previously believed to be sacrosanct, will be drastically reduced in FY 1976 (see Table C-1).

11. *Livestock Feed:* Estimates of total grain fed are calculated from official Soviet data on the quantity of concentrates fed. These data, however, are not presented by type. From total concentrates fed, we deduct the estimated quantities of milling byproducts, oilseed meals, and alfalfa meal fed, leaving a residual of grain fed. In contrast to the estimates for the other uses of grain, grain fed to livestock is almost certainly overstated by this

calculation because the estimates are based on production data rather than on standardized, or "procurement," weight. The difference between production and standardized weight is: (a) excess moisture, trash, and dirt, which have no nutritional value, and (b) weed seeds and grain admixtures, which may have substantial feed value, particularly in cases where one grain has grown mixed with another. Estimates of grain fed to livestock are therefore adjusted accordingly.

12. The share of the total grain crop fed to livestock has doubled from an estimated one third in the early 1960s to two thirds in 1975. With the higher priority given to the livestock program under Brezhnev, herds have increased, and grain fed per animal has risen rapidly. Productivity gains have not followed suit. Due to poor breeding, unbalanced rations (too much bulky roughages, insufficient energy and protein feeds), and lack of proper management practices, the grain-to-final-product ratio in the Soviet Union remains abnormally high.

Grain Balance for Recent Years

13. A rough grain balance for FY 1972-1976 is shown in Table C-2. The difference between total supply and total requirements is a notional estimate of additions or deletions from non-strategic grain stocks. In any event, it gives no clue as to the size of strategic grain reserves. If it is assumed, however, that non-strategic reserves were exhausted, or nearly so, following the bad 1972 harvest, it can be seen that even the surplus production from the USSR's record 1973 harvest and this year's massive imports are not enough to meet demands in FY 1976. In fact, if non-strategic reserves were substantially larger than we believe, the USSR in 1976 would almost certainly draw down more than the 7 million tons shown in Table C-2 so as to increase the feed allocation closer to the level of recent years. It is therefore improbable, given the magnitude of the shortfall and the priority demands of the livestock sector, that current imports are being used to build strategic reserves, which are probably maintained at a predetermined level based on estimated wartime requirements through good years and bad.

Table C-2
USSR: ESTIMATED SUPPLY AND DEMAND FOR GRAIN
FY 1972-FY 1976

Million Metric Tons

Fiscal Year	Supply			Demand					Additions or Deletions from Non-Strategic Stock	
	Grain Production ¹	Imports	Total Supply	Feed ²	Food	Seed	Industrial	Export		Total Demand
1973.....	149.7	24.4	174.1	96.3	59.7	25.4	3.0	5.8	190.2	-6.1
1974.....	193.0	12.4	210.4	94.9	59.0	27.0	3.2	7.5	191.6	13.3
1975.....	174.2	7.0	181.2	100.0	53.0	27.4	3.0	4.9	193.3	-12.1
1976 preliminary.....	124.6	24.7	149.3	72.0 ³	54.0	27.0	2.0	1.5	156.5	-7.2

¹ Domestic production minus an estimated 3 percent handling loss (transportation and storage) and an estimated 3 percent waste resulting from excess moisture and extraneous matter.

² Estimated feed consumption less an 11 percent adjustment for handling loss and waste.

³ Residual for use as feed. Under normal supply conditions the use of grain for feed would have been on the order of 105-110 million tons.

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