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The Great Food Fumble

The causes of the food crisis and some policy issues that it raises are discussed.

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Shortages and high prices of agricultural commodities have given rise to a new wave of alarm about long-term world food prospects. There is a widespread belief that the events of the past 3 years may be the first signs of a fundamental change in the balance between world food demand and supply. In its most extreme form, this school of thought sees the world rapidly approaching the point where population growth and rising affluence will outrun the world's capacity to feed itself; where it will run out of land, water, and energy; where additional applications of fertilizer and other inputs will bring negligible returns (*1*). A more moderate version of this view predicts, not imminent disaster, but a reversal of past trends in agricultural production costs. According to this view, the era of agricultural "surpluses"—and of "surplus" agricultural production capacity—has come to an end: rapidly rising demand in both the industrial and the developing countries will put increasing pressure on agricultural resources, causing real food prices (that is, food prices in relation to general price level) to rise. As a result, it will become increasingly difficult to sustain present levels of food consumption (*2*).

Others question this thesis. They believe that the recent shortages can be traced to transient factors; that the possibilities of expanding food production in developed as well as developing countries are far from exhausted; that rising demand can be satisfied largely through further increases in yield per acre; that there still are vast land reserves suitable for crop production should the need arise; and that the necessary expansion of agricultural production can be achieved, for many years to come, without a dramatic increase in real costs of production (*3–5*).

The historical record lends support to the more optimistic view. Alarm about world food supplies has been a recurrent theme ever since Malthus. At least three waves of pessimism have swept the world since the end of World War II: in the late 1940's and early 1950's, in the mid-1960's, and in the past 3 years. In each case, the concern was prompted by temporary shortages in the aftermath of war, or a series of droughts in major grain growing areas. In each case, the predictions of continuous shortages were based mainly on high rates of population growth in the developing world; it is only in the current crisis that almost equal emphasis is being placed on the "wasteful" indirect consumption of original food energy, in the form of livestock products, associated with rising affluence in the developed countries.

As it turned out, the growth of population has exceeded the most pessimistic expectations. Yet world grain production (which accounts for the bulk of the original food energy produced), kept sufficiently ahead of population growth to permit an annual improvement in per capita consumption of about 1 percent. To be sure, the improvement was not shared equally among rich and poor. In the affluent countries, with production rising by approximately 3 percent a year, and population growing by only 1 percent, a 2 percent annual increment in grain supplies was available for livestock feeding to support the rising demand for animal products. In the densely populated developing countries, where the diet still consists predominantly of grain and nearly all the grain produced is needed for direct human consumption, the growth of production—though also about 3 percent annually—barely kept ahead of population growth (about 2½ percent). This situation, of course, is extremely unsatisfactory, if we bear in mind that perhaps one-third of the people in these countries continue to live on the margins of subsistence; but it is not new.

Causes of the Food Crisis

What, then, accounts for the sharp deterioration in the world balance of supply and demand in the past 3 years? Why did grain and soybean prices more than triple (Fig. 1) (*2*)?

It is the purpose of this article to show that these events (*6*) can be explained essentially as the result of transitory factors: an unusual, but not unprecedented, series of crop shortfalls in the U.S.S.R., South Asia, and North America; and the failure of the major producing and consuming countries to prepare for such an eventuality. However, long-term factors, making for greater instability in world agricultural trade, played a contributory role.

The crisis was touched off by the failure of the Soviet grain crop in

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← *Rice plants [U.S. Department of Agriculture, Washington, D.C.]*

Table 1. Net exports (+) or imports (−) of grains, excluding rice (*3, 17*).

	Millions of metric tons			
	1970–71	1971–72	1972–73	1973–74
United States	+38.3	+41.3	+70.7	+74.9
Canada	+15.8	+18.4	+18.9	+14.4
Australia	+12.3	+10.7	+ 5.1	+ 7.2
Western Europe	−27.6	−19.0	−18.7	−21.6
Japan	−15.3	−15.2	−17.5	−19.4
U.S.S.R.	+ 7.5	− 1.0	−19.6	− 4.6
Eastern Europe	− 7.9	− 8.9	− 8.0	− 5.2
China	− 3.7	− 3.3	− 6.1	− 7.7
Developing countries	−15.4	−26.9	−23.2	−30.3

1972. The crop was 161 million tons, 13 million tons down from 1971. The shortfall from the trend was severe—of the order of 20 million tons—though not quite as large as in 1963 (about 30 million tons) or in 1965 (24 million tons). However, in contrast to the mid-1960's, when it absorbed most of the shortfall by reducing grain consumption by livestock, the Soviet Union decided to make up the entire 1972 deficit by imports. In addition, it sharply cut its usual exports—primarily wheat to Eastern Europe—from about 6 million tons to 1.7 million tons, and thus forced these countries to look for supplies elsewhere. For the U.S.S.R. and Eastern Europe combined, net imports rose to some 28 million tons in 1972–1973, as compared with around 4 million tons in normal years. It is this deficit that accounted for the rise of 26 million tons in grain exports by the three major grain exporting countries (*7*): no other significant changes in the grain trade pattern occurred in that year (Table 1).

The massive Soviet grain purchases in 1972–1973 were the principal factor in the decline of carryover stocks in the major exporting countries, from 92 to 58 million tons—a 20-year low (Table 2). Grain prices rose sharply.

Farmers in the United States, Canada, and Australia responded to the shortage and high prices by increasing the grain area by 22 million acres (10 percent). Wheat production went up by 12 million tons (19 percent) in 1973–1974, but low U.S. yields held the increase in coarse grains to 5 million tons. Meanwhile exports by the three main grain exporters continued at the same high level as in 1972–1973, with increased demand from developing countries, Communist China, Japan, and Western Europe offsetting the 18-million-ton decline in exports to the Soviet Union. The continuing high level of export demand resulted in a further drain on grain stocks. Grain prices continued to rise, reaching a peak of 3½ times the mid-1972 level for wheat and 2½ times for corn.

High prices stimulated a further increase in U.S. grain acreage by 10 million acres (7 percent) in 1974, and grain prices began to decline in the spring of that year in anticipation of a bumper harvest. Then disaster struck in the form of the worst growing season (particularly for corn) experienced in the United States in a quarter century. With the average grain yield 0.30 ton per acre (20 percent) below trend, the drought and early frost wiped out 50 million tons, thus more than offsetting the 37-million-ton production anticipated from the 25-million-acre increase in U.S. grain area in the past 2 years. Total grain stocks of the three major exporters are projected to reach new lows at the end of the current season. Grain prices went up again, reaching new peaks in the fall of 1974, with corn at an all-time high at three times its mid-1972 level.

High grain prices, together with stagnating or declining consumer incomes, are beginning to have an impact, however, in discouraging demand. In the United States, grain consumption for feed is expected to be down by 33 million tons (22 percent) from 1972–1973. Grain imports by Japan,

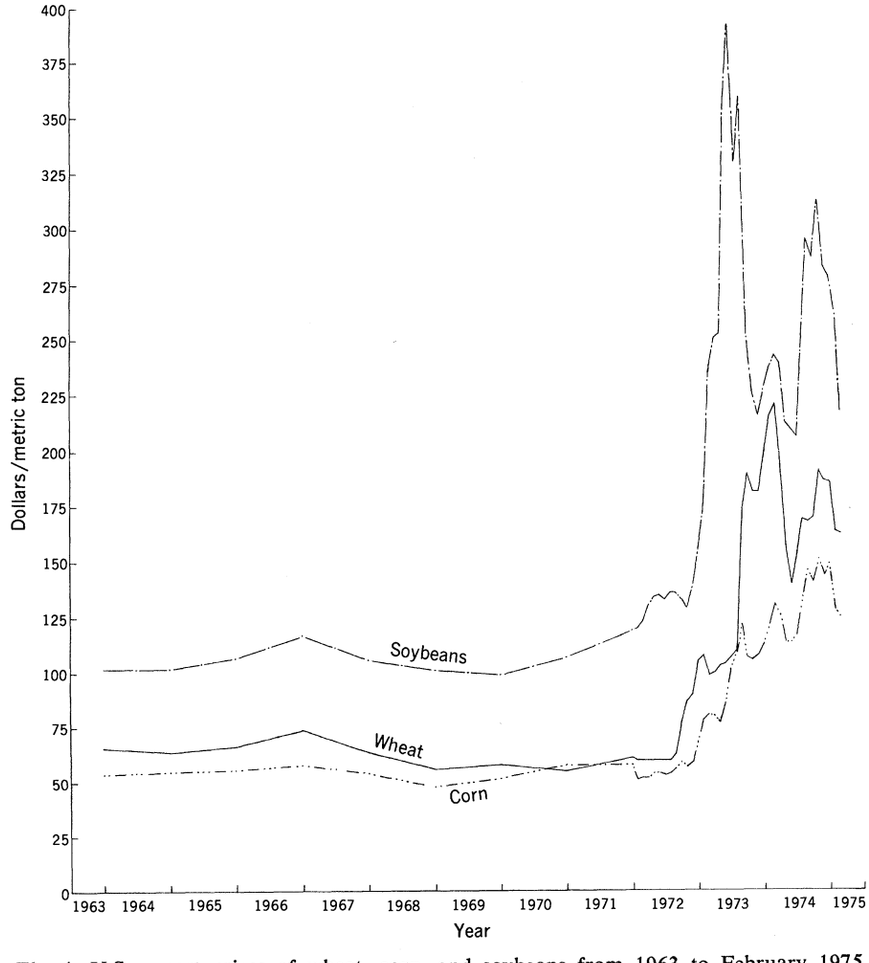

Fig. 1. U.S. export prices of wheat, corn, and soybeans from 1963 to February 1975. The wheat figures are f.o.b. at Gulf ports after export subsidy. Export subsidy averaged $4.78 in 1970, $2.17 in 1971, $4 in the first half of 1972, $4.32 in July 1972, $11.98 in August 1972, $6.25 in September 1972, and zero thereafter. The figure for corn (U.S. No. 2 yellow) and soybeans (U.S. yellow) are f.o.b. Gulf ports.

which had been rising by 2 million tons annually in 1972–1973 and 1973–1974, are expected to decline for the first time in many years. The Soviet Union is again exporting about as much as it is importing. Exceptions are India, which is likely to import over 7 million tons of wheat this year, as compared with 3.6 million tons last year and between 1 to 2 million tons in each of the three preceding years, and Iran which may import more than 2 million tons. Increased export availabilities from Australia are contributing to an easier supply and demand situation that is reflected in the substantial decline of grain prices in the past few months.

Lessons of the Crisis

Questions are now being raised concerning the lessons that might be drawn from these events. Was the crisis avoidable? Why were stocks inadequate? Are government policies to be blamed? Were there factors that could not have been foreseen?

What can be done to avoid a recurrence? Are larger stocks the answer? How large a reserve do we need? Who should hold the stocks? How should they be managed? What degree of international coordination would be required? How much would it cost and how should the costs be shared? Who would benefit the most: farmers or consumers? Exporting or importing countries? Would the benefits justify the costs?

The first question can be answered affirmatively. The crisis could have been avoided if the United States (and other grain exporting countries) had been more prudent in maintaining grain production and adequate stocks.

Why did these countries run their stocks down to dangerously low levels? In the 5 years from 1968 to 1972, the policies of the United States and of other grain exporting countries were dominated by a soft market and the fear of surpluses. The United States and Canada were determined not to let "excess stocks" accumulate as in the 1950's and early 1960's. Competition was fierce, particularly in the world wheat market, to the point where price cutting and export subsidies caused the breakdown in 1968–1969 of the minimum price provisions of the just-negotiated International Grains Arrangement. As soon as stocks had recovered moderately from their low in 1967, the United States and Canada took steps to restrain production. Between 1967 and 1972, U.S. wheat acreage was cut back from 59 to 48 million acres; the U.S. coarse grain acreage was cut from 103 to 96 million acres: Canada's wheat acreage was cut from 31 to 22 million acres. If the acreage had been held at the 1967 level, more than 100 million tons of additional grain would have been available in 1972. If the acreage had been held at the somewhat lower 1968 level, more than 50 million tons of additional grain would have been available—more than enough to ride out the crop failures of 1972 to 1974 without significant price increases.

The U.S. Department of Agriculture was slow in reversing gears even though it had become apparent that the market had turned around. So anxious was the department to "get rid of the surpluses," even after the Soviets had entered the market on a massive scale, that it kept increasing wheat export subsidies to offset the increase in domestic prices. Thus export subsidies amounting to about $300 million were committed within a few weeks before they were terminated in the summer of 1972. Acreage restraints were not lifted completely until the 1974 crop.

Admittedly, cause and effect are always seen more clearly with the benefit of hindsight. However, poor harvests have occurred in the past, sometimes affecting two or more areas of the world simultaneously or in rapid succession. North America experienced two severe drought years in the mid-1930's affecting all grains, and two more droughts affecting wheat. Crop failures in the U.S.S.R. in 1963 and 1965 and in India in 1965–1966 and 1966–1967 were the major factors in the 41-million-ton decline of major exporters' grain stocks, and the 46-million-ton decline of U.S. grain stocks during that period (Fig. 2).

The experience of the mid-1960's should have been a warning. It signaled the crucial role which North American carryover stocks had come to play as a balancing wheel in the world grain market. These reserves enabled the world to meet the Soviet and Indian crop shortfalls of 1963 to 1966 without significant price increases.

What makes the situation in 1972 to 1974 different from that of the mid-1960's is that we were less well prepared for it. In 1963, U.S. and Canadian carryover stocks of wheat totaled 46 million tons—100 percent of the

Table 2. Wheat and course grains: area (millions of hectares), production, net exports, and beginning stocks (millions of metric tons) of major exporting countries, from 1962–63 to 1974–75 (*18*).

Year	United States				Canada				Australia				Total			
	Area	Production	Net exports	Beginning stocks	Area	Production	Net exports	Beginning stocks	Area	Production	Net exports	Beginning stocks	Area	Production	Net exports	Beginning stocks
1962–63	58.9	158.3	32.5	101.5	17.7	27.8	9.1	13.4	9.1	11.0	6.8	.5	85.7	197.1	48.4	115.4
1963–64	60.9	170.8	39.9	91.0	17.9	32.7	16.9	17.7	9.1	11.5	7.6	.7	87.9	215.0	64.4	109.4
1964–65	59.4	156.6	39.1	87.4	18.0	27.0	11.5	18.1	9.8	12.8	8.0	.6	87.2	196.4	58.6	106.1
1965–66	58.9	179.2	49.8	71.9	17.9	30.6	16.5	18.3	9.8	9.4	5.4	.7	86.6	219.2	71.7	90.9
1966–67	59.8	179.8	40.1	52.8	18.9	37.0	14.8	15.9	11.5	16.6	9.2	.5	90.2	233.4	64.1	69.2
1967–68	64.6	203.3	41.5	45.3	19.1	28.5	9.4	20.5	11.8	9.6	6.0	2.7	95.5	241.4	56.9	68.5
1968–69	61.7	197.1	31.3	58.7	19.2	32.7	8.1	22.5	14.1	18.6	7.2	1.8	95.0	248.4	46.7	83.0
1969–70	58.0	200.1	35.4	67.8	17.6	34.1	10.5	29.9	12.9	14.3	9.0	8.5	88.5	248.5	54.9	106.2
1970–71	57.7	182.1	38.6	68.1	12.7	26.5	15.8	34.6	10.7	13.4	12.0	8.6	81.1	222.0	66.4	111.3
1971–72	62.3	232.4	41.6	50.0	17.2	36.6	18.4	25.4	11.7	14.3	10.6	5.3	91.2	283.3	70.6	80.7
1972–73	57.2	223.3	71.0	67.4	17.0	33.3	18.7	22.1	11.5	10.1	5.6	2.6	85.7	266.7	95.3	92.1
1973–74	63.3	232.3	71.1	41.1	18.2	34.9	12.9	15.8	12.7	16.8	9.7	1.0	94.2	284.0	93.7	57.9
1974–75	67.3	198.6	60.0	26.7	17.6	29.8	12.8	16.4	13.1	16.8	12.2	2.6	98.0	245.2	85.0	45.7

average annual disappearance (domestic consumption plus exports) during the preceding 3 years. In 1972, these stocks amounted to 39 million tons, 70 percent of average disappearance during the preceding 3 years. Over the same period, U.S. carryover stocks of coarse grains, as percentages of average disappearance in the preceding 3 years, declined from 43 percent to 26 percent. It is clear in retrospect that allowance should have been made for the increased volume of domestic consumption and exports in assessing the adequacy of stocks in 1971 and 1972.

There is a widely held view that an unpredictable surge of demand contributed importantly to the rapid drawdown of stocks in 1972 to 1974. Is there evidence of a "demand explosion" in the affluent countries? In the 1960's, total grain consumption (direct and indirect) in the OECD (Organization for Economic Cooperation) countries increased at a fairly steady rate of 2.5 percent annually. The increase from 1971–1972 to 1972–1973 was slightly higher (3.0 percent): but it dropped to 0.5 percent in the following year, mainly because of high grain prices. Total grain consumption is related to income growth. The growth of real income in the OECD countries in 1972 and 1973 was somewhat above average (about 6 percent compared with an average of 5 percent in the preceding 8 years) (*8*). Other things being equal, and assuming an income elasticity of total grain demand of 0.50 percent, the acceleration of total income growth by one percentage point may have accelerated the growth of grain consumption in the OECD countries by 0.50 percent a year, or about 1.7 million tons—hardly a major factor.

What about the developing countries? Income growth in these countries accelerated gradually during the 1960's and 1970's but was below trend in 1972 and only slightly above trend in 1973 (*9*). Here again, the effect, if any, on grain consumption in these 2 years could not have been significant.

It is also claimed that the devaluation of the U.S. dollar played an important role in increasing foreign demand by making American grain prices more attractive. This could, however, not affect the demand for American grain in the European Community, whose variable levy system automatically offsets any decline in the price of foreign grain, as compared with that of domestic grain, by an increase in the levy. It could have had an effect in

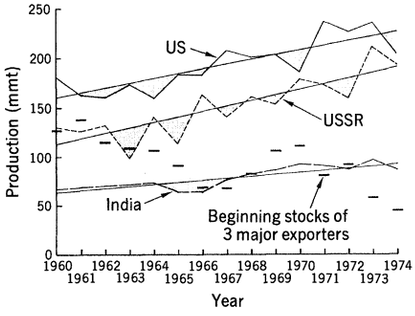

Fig. 2. Total grain production, in the United States, the U.S.S.R., and India and beginning stocks of three major exporters. Rice is included on a milled basis. The data for 1974 are preliminary. The data are taken from (*19*).

Japan, but a recent analysis concludes that the impact on U.S. wheat sales to Japan could not have been more than 3 to 4 percent (no significant effect was found for corn and sorghum) (*10*). In any event, any potential effects of the exchange rate changes in stimulating foreign demand were soon overshadowed by the sharp upsurge of world grain prices in the wake of the Soviet purchases.

One factor that was difficult to foresee was the decision of the Soviet Union, noted earlier, to make up the entire crop shortfall in 1972 by increased imports. Another indication of increased resistance to belt tightening is India's decision to import 7 to 8 million tons of grain this year, despite high prices and despite the fact that all but a small fraction of these imports must be purchased on regular commercial terms. Grain imports of developing countries, in general, have been greater than expected.

The Reserves Issue

What future course of action is suggested by the experience of the past few years? There seems to be agreement, in principle, that greater price stability is desirable and that more adequate reserves are needed; but the consensus is more apparent than real. At one extreme is the view, held strongly by the U.S. Secretary of Agriculture, that all that needs to be done is to give free rein to market forces (*11*). Let farmers produce without artificial props or constraints. Leave the responsibility for carrying reserves to private traders, processors, and farmers. If importing countries are concerned about securing a regular flow of supplies within a certain price range, let them build up their own stocks, or enter into long-term contracts. At the other end of the spectrum are those who favor a return to total supply management, complete with increased price supports, deficiency payments, government stockpiling, and acreage limitations when necessary.

Complete reliance on the market has the appeal of simplicity but will it do the job? Unrestricted production in the United States would seem to be desirable because it would lead to lower food prices, increased consumption, and the rebuilding of normal commercial stocks. But it will not, by itself, ensure adequate stocks to guard against the ever-present possibility of simultaneous or successive crop failures in the United States and other areas of the world. Nor can private holders be expected to bear the cost of holding stocks adequate to meet contingencies that may occur only once in 6 to 8 years: this is clearly a job for governments. Long-term contracts may appeal to some of the more affluent importers, but the effect would be to make the rest of the market even more volatile.

A return to total supply management, on the other hand, would involve a great deal more government intervention than is required to ensure reasonable stability of supplies and prices. All that would seem to be required is a grain reserve of limited size, though adequate to meet contingencies such as those experienced in the mid-1960's and again in the past 3 years. The stocks would be over and above normal, privately held carryover stocks. They would be built up when world grain prices return to their normal relation with production costs and released only when (i) world prices are abnormally high or (ii) for famine relief in developing countries.

Such a buffer stock could serve the interest of farmers as well as consumers in both exporting and importing countries. It would tend to support farm incomes when prices are low, while avoiding excessively high prices such as we have seen recently. It would not interfere with the functioning of the market but would influence the market in a predictable fashion.

How Much Is Adequate?

What should be the size of such a buffer stock? The answer depends on a number of factors, including the variability of North American grain yields,

the variability of future export demand, the degree of price instability that we are prepared to tolerate, whether or not export controls are to be ruled out, and, of course, the cost of carrying stocks. A number of recent estimates based, in the main, on past experience of shortfalls for the world as a whole in any one year, and assuming only limited substitutability among grains, indicate reserve requirements ranging from 50 to 80 million tons to cover 95 percent of expected shortfalls (*12*).

The experience of the years of 1963 to 1967 and 1972 to 1975 suggests that an even larger reserve, of more than 80 million tons, over and above privately held working stocks, would have been required to keep real grain prices reasonably stable during the latter period.

In 1963, U.S. and Canadian grain stocks (all grains for the United States; wheat only for Canada) totaled 109 million tons. By 1967, these stocks had been drawn down by 48 million tons to 61 million tons, without significant increases in world grain prices. In 1972, North American grain stocks totaled 85 million tons (of which 23 million tons were held privately in the United States). By the end of the current crop year, these stocks are expected to be down by 58 million tons, to 27 million tons. It is possible that the run-up of grain prices could have been largely avoided if we had started in 1972–1973 with an additional 24 million tons of grain, as we did in 1963, but we cannot be sure. A beginning stock of 120 million tons in 1972–1973 would have permitted the drawdown of 58 million tons and would have left ending stocks in 1975 at the same level as in 1967; or alternatively, it would have enabled the United States to avoid the cutback in livestock feeding and would have left a minimum carryover stock of about 30 million tons.

If we assume, as a working hypothesis, that a North American grain carryover of 120 million tons would have been adequate to meet a contingency like that of the past 3 years without significant price increases, how much of this can be expected to be carried by private holders? The answer depends, among other things, on traders' price expectations and on the size of government stocks. As a rough estimate, based on data for 1972, a working carryover of about 20 to 25 million tons may be expected to be held privately, leaving a reserve of 95 to 100 million tons that would have been required to keep grain prices at their 1972 levels. Alternatively, the price increases could have been substantially moderated if we had entered 1972–1973 with a reserve of 80 million tons, instead of 60 million tons.

Cost of Greater Stability

The idea of a buffer stock of grain is as old as the story of Joseph in Egypt. There is no record that Pharaoh inquired about storage costs. Costs are a minor consideration when the issue of holding or not holding reserves becomes a matter of survival.

Fortunately, the United States does not find itself in that situation. In the event of a crop failure we can, without too much pain, cut down on the feeding of grain to livestock—although not without inflationary effects; or we can restrict exports—although not without damaging our long-term interests in foreign markets.

For the United States today, it is therefore appropriate to weigh benefits against costs. Yet this is an area of considerable uncertainty, partly because we lack adequate quantitative analyses of probable costs involved in carrying stocks adequate to keep prices within stated limits; and partly because of differing perceptions of the benefits (one man's benefits may be the other man's cost).

It is possible, however, to get a rough idea of the costs involved in carrying a specified level of reserves. To carry a stock of 80 million tons would involve around $450 million annually in storage costs alone. To this one would have to add interest costs and then deduct the price gain on resale. Both of these factors are affected by inflation: The greater the rate of inflation, the higher the interest charges but the greater, also, the probability that the reserve-holding authority will be able to sell at a substantially higher price. On the other hand, to the extent that the authority is successful in keeping price fluctuations within narrow limits, it will limit the opportunities for price gains to offset carrying costs. There is a trade-off, therefore, between the desired degree of price stability and the cost, in terms of size of reserves required, length of time reserves must be carried, and price gains on resale (*12a*).

As an example, supposing the authority had acquired wheat over a number of years from 1968 to 1972, at an average price of $60 per ton, with the objective of keeping the price below $120 per ton, the price difference would have exceeded the carrying charges by a substantial margin. However, on the basis of past experience, it would be rash to count on this. The chances are that in the long run the price gains would not be sufficient to cover the carrying costs.

Questions on which further research is needed concern (i) the amount of grain that could be expected to be held by private traders, processors, and farmers in the absence of government intervention, and the variability of prices that would result; (ii) the relationship between the size of government-held (or government-subsidized) buffer stocks, the net costs of holding such stocks, and the resulting variability of prices; and (iii) how much of the cost is attributable to the extreme variability of Soviet demand.

Benefits of Greater Stability

The benefits of avoiding extreme price fluctuations lend themselves less readily to objective analysis than do the costs. Grain growers tend to enjoy price instability on the upswing but are quick to call for government intervention when prices fall. The reverse is true of grain users, including livestock and dairy farmers, and consumers. It has recently been suggested that demand may have become less elastic at higher and more elastic at lower prices, giving the consumer a greater stake and the producer a lesser stake in price stabilization (*13*). Be this as it may, the problem has to be looked at from the point of view of the national interest, and of the world as a whole.

There are several reasons why a greater degree of stability of grain prices is desirable. Grains are the principal food in the larger part of the world, and the principal raw material for food production in the industrialized world. Grain prices are, therefore, a major determinant of food prices.

The U.S. experience in 1973—a year not yet affected by the oil crisis—may serve to illustrate this point (*14*). As grain prices doubled, retail food prices rose by 20 percent. The rise in food prices, in turn, was the major factor in the 10 percent rise in the cost-of-living index; without it, the inflation rate would have been about 3 to 4 percent.

The inflationary effects of a tem-

porary upsurge in grain prices are the more serious because they are largely irreversible. Higher food costs are locked into the wage and price structure of the nonagricultural sectors, which is flexible only upward. Any subsequent decline of grain prices will have only minor effects on retail food prices (60 percent of which are accounted for by processing and marketing costs) and even smaller effects on the cost-of-living index. The rise in the level of nonagricultural prices, in turn, will cause a permanent increase in agricultural production costs as farmers have come to depend rather heavily on inputs purchased from the nonagricultural sector. This "ratchet effect" of commodity booms—their tendency to give a permanent boost to the inflationary spiral—provides an important justification for efforts to stabilize supplies and prices of primary commodities (*15*).

Another benefit stems from the interest of the United States in preserving and developing its agricultural export markets. In 1974, grain and soybean exports brought in about $16 billion or 22 percent of total U.S. export earnings. It is true that current shortages and the resulting high prices were helpful in swelling our export proceeds for these commodities; in the long run, however, excessive instability of supplies and prices would be likely to stimulate protectionist tendencies abroad. Equally damaging to our export interests are the pressures for export controls, which are difficult to resist in times of acute shortages. The embargo on soybeans in the summer of 1973 and the barely averted threat of export controls on grains in 1974 already have led our traditional customers in Europe, Japan, and elsewhere to have second thoughts about their dependence on the United States as a supplier. A grain stabilization reserve would help to assure importing countries of uninterrupted supplies at reasonably stable prices, an assurance that is essential if these countries are to proceed with trade liberalization.

Last but not least, the United States shares with other countries a concern about averting famine abroad. When grain supplies are short and prices are high, the flow of food aid tends to dry up. Domestic needs and commercial exports take precedence over the pressing needs of countries unable to pay cash. Where funds have been set aside to finance food aid, they may buy less than half the quantities programmed before prices went up. Thus the quantities of grain shipped by the United States on concessional terms dropped to a 20-year low in fiscal year 1974. A grain stabilization reserve would facilitate a more stable flow of food aid to needy developing countries.

Striking a Balance

To place a value on these social benefits is, of course, a political judgment, and so is the determination of the degree of instability that is tolerable. Indeed, most of us would agree that considerable price flexibility is desirable. Price plays a vital role in guiding producer responses to changes in demand and changes in production costs, and consumer buying decisions (*16*). Here again, the problem is to strike a balance by providing a wide price range within which the stabilization authority would not intervene in the market.

An International Grain Stabilization Reserve

In the 1960's and early 1970's, the world's exportable grain reserves were carried almost exclusively in North America. There is no reason why the United States and Canada should bear this burden alone, for the benefit of the world as a whole. What is needed is an international arrangement by which this responsibility would be shared among both exporting and importing countries. This could be done on the basis of a formula that takes into account a country's national income and its role in grain trade. The U.S. share should be about one-third. Participation by developing countries in sharing the cost would be desirable but not essential. Soviet participation is essential if Soviet requirements are to be covered. If the Soviet Union is not prepared to participate in the arrangement, it must accept to be excluded from its benefits. In other words, in the event of a shortage, participating countries would be justified—indeed required—to impose controls and perhaps a surcharge on exports to the Soviet Union.

There is no need for a new international bureaucracy to manage a world grain stabilization reserve. The grain could be stored in existing facilities in exporting and importing countries. Grain required by net importing countries to meet their stockholding commitments would be bought in the world market. Stocks would remain under national control, but acquisition and release would be subject to agreed guidelines and international consultations. What is needed is something more flexible than automatic action when prices reach specified levels but more binding than a consultation procedure that commits nobody.

A proposal for internationally coordinated grain reserves was put forward, in very general terms, by the Director General of the U.N. Food and Agriculture Organization (FAO) and endorsed at the World Food Conference last year. It is to be hoped that the governments will follow up on it before the memory of the fuel crisis recedes from the public mind.

Outlook for the Medium Term

Last year's experience should caution us not to count our chickens before they are hatched; but if we assume better luck with the 1975 harvest, grain and soybean prices should soon revert to their normal relationship with production costs. In fact, grain price prospects are already being viewed with alarm by our farmers. There is a danger that current legislation, which provides for substantially increased support prices, may launch the United States on yet another cycle of "surpluses" and acreage restrictions.

It is well to keep in mind, in this context, that a return to relative abundance of food in the affluent countries will not cure the problem of chronic food shortages in much of the developing world. The "world food problem" will, again, be recognized as being what it always was: the problem of the poor countries, particularly the densely populated countries of South Asia. Despite the gradual improvement of per capita food supplies over the past 20 years, the situation of these countries continues to be grim. In India, the Green Revolution has suffered a setback: grain production failed to increase in the past 4 years. This stagnation is only partly due to unfavorable weather; other factors, including the leveling off of fertilizer use, and problems of adaptation of the new varieties, seem to have played an important role. In other countries, such as Bangladesh,

the Green Revolution has not yet begun.

The FAO has estimated that, on present trends, population plus income growth will boost net import requirements of the developing countries from an average of 16 milion tons in 1969 to 1971 to 85 million tons by 1985 (*5*). Imports of this magnitude, while not precluded physically, would place a heavy burden on these countries' ability to earn foreign exchange. Even assuming wheat prices drop back to about $100 per ton f.o.b. Gulf ports, the foreign exchange cost would be about $10 billion.

The possibility that millions of acres of efficient American food production capacity may again be idle because of acreage controls is difficult to reconcile with this prospect. If it should again become necessary to support American farm incomes, it would seem to make more sense to accomplish this objective through a carefully planned build up of reserves for future emergencies, and substantially expanded food aid. To secure appropriate foreign participation in food aid, the United States could propose an increase in the quotas under the Food Aid Convention, from the present 4.2 million tons to 10 million tons, and increased pledges to the World Food Program.

Does food aid make sense? There are many people who question present programs on the grounds that they do not reach the people in greatest need and that they may cause developing countries to relax their efforts to increase agricultural production and to control population growth. A more fundamental criticism is that aid funds could be spent more efficiently on fertilizer and agricultural development assistance, and, most efficiently, on education and research.

What the critics overlook is the element of time. It takes time to overcome the enormous technical, educational, and institutional obstacles to agricultural development. Even with greatly increased development assistance, there is a point beyond which the rate of improvement cannot be speeded up. The same is true of population control. Meanwhile, hundreds of millions of people live in conditions where malnutrition is chronic and starvation is an ever-present threat. Food aid can help meet their most pressing nutritional needs.

Properly administered food aid programs can make an important contribution to economic development. There is ample evidence that undernourishment is a major factor in the low level of human productivity in many developing countries. And there are several ways in which food aid can be linked directly with rural community projects and other agricultural development activities.

This does not mean that food aid should be regarded as a substitute for more direct ways of dealing with the basic problem, which is to speed up the growth of food production and to slow down population growth. There has been a marked shift in recent years in both U.S. and international economic assistance programs toward increased emphasis on agriculture, rural development, and family planning. Cooperation by the newly affluent oil-exporting countries should make it possible to expand this effort several-fold. To enlist their interest, it will be worth pursuing the proposal of an International Agricultural Development Fund which was put forward by some of the Arab countries and endorsed by the World Food Conference. A major expansion of the international agricultural research effort, sponsored by the World Bank, FAO, and UNDP (U.N. Development Program), is under way. The governments of many developing countries, with some prodding from the international organizations, are paying greater attention to the agricultural sector. There are good reasons to believe that in time these efforts will bear fruit.

References and Notes

1. See, for example, Environmental Fund, Declaration on Population and Food, October 1974.
2. See L. R. Brown and E. P. Eckholm, *By Bread Alone* (published for the Overseas Development Council by Praeger, New York, 1974).
3. Examples of this more optimistic outlook are the recent survey of "The World Food Situation and Prospects to 1985" by the U.S. Department of Agriculture, Economic Research Service, Foreign Agricultural Economic Report No. 98, Washington, D.C., 1974, and in (*4*) and (*5*) below.
4. H. Walters, "The world food situation," paper presented at the National Agricultural Outlook Conference, reprinted in U.S. Senate, Committee on Agriculture and Forestry, *1975 U.S. Agricultural Outlook* (Washington, D.C., 23 December 1974); D. G. Johnson, "Are High Farm Prices Here to Stay?" The Morgan Guaranty Survey (Morgan Trust Company, New York, August 1974); T. W. Schultz, "The Food Alternatives Before Us: An Economic Perspective," University of Chicago, Agricultural Economics Paper, 74 : 6, 20 July 1974.
5. "Assessment of the World Food Situation, Present and Future," prepared by the Secretariat of the U.N. Food and Agriculture Organization for the World Food Conference, Rome, 1974.
6. For statistical data on world grain supply and distribution, see *Reference Tables on Wheat and Coarse Grains: Supply-Distribution for Individual Countries*, USDA/FAS, Foreign Agriculture Circular (U.S. Department of Agriculture, Washington, D.C., April 1974); *World Grain Situation: Review and Outlook*, Foreign Agriculture Circular (U.S. Department of Agriculture, Washington, D.C., February 1975).
7. Actually, a 30-million-ton rise in U.S. grain exports and a 1-million-ton rise in Canadian exports, offset by a 5-million-ton decline in Australian exports.
8. *Economic Growth of OECD Countries, 1963–1973* (U.S. Department of State, Bureau of Intelligence and Research, Washington, D.C., July 1974).
9. Agency for International Development, Statistics and Reports Division, *Gross National Product, Growth Rates and Trend Data by Region and Country* (U.S. Department of State, Washington, D.C., May 1974).
10. B. L. Greenshields, *Changes in Exchange Rates: Impact on U.S. Grain and Soybean Exports to Japan* (U.S. Department of Agriculture, Economic Research Service, Washington, D.C., 1974).
11. See statement by Secretary of Agriculture Butz before the House Commitee on Agriculture, Subcommittee on Department Operations, 23 July 1974, printed in *World Population and Food Supply and Demand Situation* (U.S. Government Printing Office, Washington, D.C., 1974); also Secretary Butz's statement before the Correspondent Bank Conference, Chicago, Ill., 25 November 1974.
12. United Nations Food and Agriculture Organization (FAO), *World Food Situation: Evaluation of World Cereals Study Situation* (Rome, September 1974); (*3*, chap. 5).

12a. The net costs of carrying reserves would be reduced further whenever the authority purchases grain below the target prices provided by U.S. farm legislation. To the extent that such purchases raise market prices toward target prices, the government will have to pay out less in deficiency payments to farmers, and these savings could be offset against carrying costs. Target prices under present legislation are $2.05 per bushel for wheat and $1.38 for corn. Current legislative proposals would raise these levels by 50 to 67 percent. Whenever market prices fall below support levels (loan rates) ($2.50 per bushel for wheat and $1.87 for corn under the proposed legislation), government purchases would be mandatory in any event.

13. R. Gray, "Grain Reserves Issues," Agricultural Outlook Conference, Washington, D.C., 9 December 1974.
14. D. E. Hathaway, "Food prices and inflation," *Brookings Papers on Economic Activity* (1974), No. 1. Also J. A. Schnittker, "The 1972–73 food price spiral," *ibid.* (1973), No. 2.
15. See "Trade in Primary Commodities: Conflict or Cooperation?" (Brookings Institution, Washington, D.C., December 1974).
16. "The costs of stability," speech by Assistant Secretary of Agriculture Clayton K. Yeutter, 20 February 1975.
17. USDA/FAS, *Foreign Agriculture Circular*, FG 10-74, April 1974; *World Grain Trade Statistics*, September 1974; (*3*); 1973/74, except for developing countries: USDA/FAS, *Foreign Agriculture Circular, FG 3-75*, 4 February 1975.
18. USDA/FAS, *Foreign Agriculture Circular*, February 1975; USDA, *Grain Database*, 10 February 1975.
19. Data for: 1963 to 1968: USDA/ERS; for 1969 to 1974: USDA/FATUS; for 1975: USDA/ERS.
20. FAO, *Production Yearbook* and *Monthly Bulletin of Agricultural Economics and Statistics*.