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This paper is concerned primarily with reassessing the risks associated with developing country reliance on international trade as part of a food security strategy. Such a focus is not intended to reflect a judgment on the relative importance of this aspect vis-à-vis the several other long-run and short-run aspects that relate to food security at the global, national, and local levels. It is justified, however, by the reality that the vast majority of households, in developed and developing countries alike, are dependent for their food on marketing networks that are ultimately global in nature. The paper also discusses food supply and trade issues largely in terms of grain. This is because grain is the primary staple in the diets of the vast majority, and because such data as are available relate almost exclusively to grain.

Official policy statements from many international agencies and developing countries reveal perceptions about the risks inherent in international grain markets that have not changed significantly since the dislocations of the early 1970s. Policy makers remain particularly concerned that global supplies may prove inadequate to meet the needs arising in the event of a poor harvest. And even if global supplies are adequate, concerns remain about the affordability of imports and the possible impact of political trade embargoes. Notwithstanding the large investments required to reduce reliance on international markets, there has been little effort made to assess whether, in the light of recent developments in the world grain markets, many of the concerns about the reliability of world markets are justifiable. This paper seeks to address this matter (see also Donaldson and Lewis).

World Grain Supplies and Prices

Although the data on global food trends is poor, it seems clear that grain production has grown at a generally increasing rate since the early decades of the nineteenth century and has consistently outstripped increases in global population. In the last thirty years grain production has grown more than 3% per year on average and has grown faster in developing countries than in developed countries. As a result, the price of food grains has declined steadily in real terms, with temporary interruptions when peace has not prevailed. There seems no reason why this trend should not continue through the end of this century (see Bale and Duncan, Barr).

As global grain output has grown, its year-to-year variability has changed very little. Using U.S. Department of Agriculture data on global production since the early 1960s, we find that while the absolute size of the annual global variations has increased so has the production base; the corresponding coefficient of variation was smaller in the 1970s than in the 1960s. Further, the global coefficient of variation is smaller than that for most individual countries. This indicates that production shortfalls in any country or group of countries has tended to be offset by good harvest elsewhere. However, these data do not indicate that national production variability is declining in most individual countries (in some just the reverse appears to have occurred in the 1970s).

Changes in World Grain Markets in the 1970s

Developing countries have made increasing use of expanding global markets for grain imports to make up for poor local harvests and to dispose of surpluses. However, reliance on international food markets as a means of stabilizing domestic supplies has seemed paradoxical to many governments because these markets are so widely perceived as unstable. Yet, even in 1973 when export supplies were tight and prices high, developing countries in need were able to import as much grain

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as they could handle and distribute (its availability was not limited), although at an increased price. This growth in the global grain trade has continued despite greater price instability. The reasons for this range from basic changes in the global monetary system to more mundane technical improvements in grain trading. Some of the more important factors are described below.

Changes in Stockholding and Reserves

The changes in the international markets since 1974 have provided a substantial and effective reserve from which importers may draw. This reserve has three parts. First are aggregate trade flows: these have doubled in volume from some 120 million tons in 1970–71 to over 260 million tons in 1980–81. Second are non-governmental stocks, currently averaging about 80 million tons, which backstop trade flows and are available for delivery within two to three months. The third and most important element in the world’s total “buffer stock” is the grain being fed to livestock which in the past has been diverted to make up for production shortfalls. In the last three years an average of about 620 million tons of grain (including soybeans) was fed to livestock. This is equal to over 60% of annual human grain consumption and includes large amounts of wheat (about 80 million tons) and soybeans (about 85 million tons), important sources of direct human nutrition.

The feed grain buffer has been tested over the past decade and has provided an effective and surprisingly timely response to production shortfalls. For example, when grain prices rose during 1972–74, the feed consumption adjustment mechanism proved extremely robust and the drop in U.S. feed consumption in 1973–74 was as large as the total global production shortfall (about 30 million tons, or a drop of about 21% in U.S. feed consumption). A similar adjustment occurred in 1975–76, when the global grain production shortfall was far larger than in 1973–74 (about 65 million tons below trend) but grain prices remained relatively stable. Experience in 1982–83 provides another example of this grain buffer functioning even in the face of ill-timed government interventions.

Sources of Supply and Competition

The increase in demand for grain imports has been met by a growing number of suppliers in increasingly competitive markets. Important new production areas have been opened up in Southern Hemisphere developing countries, from which grain arrives in world markets well before the North American harvest, thus reducing the need for global stocks. Annual grain exports from South America—mainly Argentina and Brazil—have risen from 10 million tons in the early 1960s to about 40 million tons today. Production increases of a similar size have been achieved in the European Community. While the United States has remained the major supplier of grains, it does not exercise monopoly power over the world market. Alternative sources of supply, particularly for rice and wheat where the U.S. market share is smaller than in other grains, give importers substantial flexibility.

In addition, importing countries are able to deal with an increasing number of major trading companies, including four Japanese firms which handle exports from the United States. Studies by the General Accounting Office and independent scholars provide evidence that international grain markets are highly competitive and that returns to capital of the major traders are comparable with those in other industries (Caves and Pugel). In addition, exporting country infrastructure for grain handling and transportation has been expanded and far exceeds the needs of the foreseeable future.

Better Information

Improved information systems including remote sensing, weather forecasting, and ground surveys have permitted major breakthroughs in the ability to monitor upcoming harvests throughout the world. This has enabled the world market to know in advance of exceptional crop shortfalls and possible import requirements. As a consequence, major producing countries, such as the USSR, can no longer surprise the market as they did in 1972. Substantial improvements also have been made in the mechanisms through which the USSR and other centrally planned economies make purchases, and information exchanges between them and suppliers have now been regularized to minimize the risks from unexpected decisions.

Integration of the Global Market

With improved telecommunications and information gathering, the organized grain markets now provide an almost instantaneous and
generally accurate reflection of the changing judgments of buyers and sellers throughout the world. Almost all international trade and the great bulk of marketed production is priced on the basis of changes in a handful of carefully watched markets. Exporters throughout the world sell at roughly the same world market price, even when domestic farmers are paid a different price, as they are in the EEC. And government-to-government sales agreements, increasingly important in trade, specify quantity ranges but not prices. Less than 10% of current world trade takes place on extra-market terms.

Growth of Futures Trading

The organized grain futures market grew almost twentyfold in the 1970s—the value of total annual transactions now approaches $300 billion—and now provides an immense base for absorbing incremental trading activity that would previously have been disruptive. Even more important, the large volume of trading permits reliable “hedging,” through which trading partners can lock in acceptable prices for future cash transactions. This also makes it possible for nongovernmental decision makers to hold carry-over stocks profitably, reducing the argument for special buffer stocks. Because they reflect current and expected supply and demand levels, the futures markets give clear signals as to when grain should be released into the market or alternatively held in stock. In late 1980, for example, when prices rose more rapidly than in 1972, only moderate amounts were released from stocks, which in the aggregate remained sufficient to meet subsequent demand. This was in striking contrast to experience in 1972, when government decisions caused excessive liquidation of stocks.

New Safety Net for Poor Countries

Agreements reached by the late 1970s help to ensure that poor developing countries will be able to buy food in the event of local crop shortfalls or high import prices. First, a binding Food Aid Convention guarantees a minimum of 7.6 million tons of concessional deliveries each year. This is double the amount of concessional food aid actually forthcoming in 1974 and is larger than all current net imports of food by low income countries (excluding China). Second, the Compensatory Financing Facility of the International Monetary Fund (IMF) has been expanded to include concessional medium-term credit for cereal imports. Loans from the facility are made for five years (with two years’ grace) at an interest rate of 7%; they are not subject to IMF conditions about the borrower’s domestic policies. A country cannot draw more from the facility than 100% of its IMF quota (which is not static over time), but the maximum is not affected by its drawings on other IMF facilities. A review of the past twenty years’ experience shows that in practice this drawing limit should not prove constraining.

Influence of Exchange and Interest Rates

Overall, variations in foreign exchange values over the last ten years have been larger than variations in food commodity prices. As a result, grain traders have resorted to using the same hedging techniques first developed in the grain futures markets to cover foreign exchange and interest rate risks. In terms of national purchasing power, changes in foreign exchange values have often proved important in determining the relative “affordability” of food imports. For example, the fall in the dollar’s trade value helped buffer the rise in dollar-denominated grain export prices in the 1972–74 period for countries like Germany and Japan; experience among developed country food importers through 1982 was basically similar. However, in 1983 both the dollar and food export prices appreciated; this was a particular problem for many food-importing developing countries. Interest rates have also affected commodity prices by raising the cost of holding stocks. Overall, exchange and interest rates have been more variable than food prices (in nominal dollars), and this variability would have made efforts to stabilize commodity prices through interventions such as buffer stocks almost impossible over the past ten years.

Developing Country Food Imports and Related Risks

There is a great difference in the food trade dependence of low-income and middle-income developing countries. While the latter have increased imports in line with rising incomes, the former have not, partly because their incomes have grown less rapidly and from a far
lower base. In the middle-income country groups, where cereal imports grew most rapidly, per capita food production also grew, but in order to meet their "affluence requirements," the middle-income countries had by the late 1970s passed the industrialized countries as the largest importers of grains. Higher incomes, particularly in urban areas, led to changes in the kinds of commodities consumed; wheat has become more important as have other higher value foods such as meat and fresh vegetables.

Among low-income countries, too, degrees of dependence on imported food differ widely. Through raising their domestic production, South Asian countries have been able to reduce their dependence on imports to feed the urban poor. In Sub-Saharan African countries the food situation is approaching the proportions of a crisis. Although the share of total foreign exchange that they devote to commercial food imports is quite small and has declined somewhat over the past two decades, their volume of food imports has risen in relation to domestic production.

Food Imports and the Balance of Payments

For the great majority of developing countries, imports of food are not a major foreign exchange burden. As always, some countries have fared much worse than the average. When their own harvests have been poor, certain low-income countries have had to forego planned imports of various kinds in order to buy food. Making these purchases on commercial terms has sometimes been very costly; certain countries have had to devote, albeit for only one year, almost half of their annual export earnings to buy food. But for developing countries as a group, food imports have constituted only a small and declining proportion of the import bill over the past two decades. The increased pressure of balance of payments, a serious problem for many relatively affluent food importers including some oil exporters, has come not from food but from oil (the real cost of which increased sixfold while that of grains declined), from debt servicing, and from other imports.

Skill in Trading

It is also worth noting that the cost of food imports depends to a large extent on the skill of the purchaser. Recent changes in world markets have helped to widen the gap between the more efficient traders and those others who have followed inappropriate import practices. Developing countries have not generally taken advantage of mechanisms, such as basis trading (negotiating each element of the delivered cost on the most advantageous terms), which can help lower the cost of food imports. The cost of retaining systems appropriate in the 1960s has proven high. Judging from country case studies—which have been confirmed by trade sources—developing countries as a group could save up to $1 billion in foreign exchange each year out of their total commercial grain imports of about $8 billion. The sources of potential savings include freight and handling; purchasing arrangements including timing, the type and grade specification of the food bought, and its point of origin; financing and insurance; market intelligence; and regularized and open trading procedures. That the potential savings are real is indicated by the fact that some countries (e.g., China, Chile, and Colombia), in tight market situations, appear to pay prices similar to those paid by the most efficient traders among industrialized countries.

Reliability of Import Access

Much recent policy debate has centered around the issues of whether countries should risk dependence upon foreign suppliers and uncertain international markets for so vitally important an item as food. Fear that exporters may withhold supplies for political reasons provides a strong impetus for seeking self-sufficiency. However, the last twenty years provides little evidence to justify such a concern. Even the USSR, the world's largest importer and the only country to be subjected to a food trade embargo, has successfully implemented a food security strategy, the viability of which depends on imports; nutritional well-being has been raised, and consumption has been made less variable. Small countries also can follow such a strategy. And, in emergencies, food need not be purchased directly from exporting countries; it can be bought in entrepots such as Malta, Rotterdam, or Singapore for only a small premium above the world price.

No developing country has ever been prevented by political action from obtaining needed supplies. For example, Iran continued
to purchase U.S. grain all through the 1979–80 period when almost all its other commercial, financial, and political ties were cut off. In either tight markets or tense political situations when supplies were needed quickly (within a few months), sources have been found to meet import requirements. Premiums for such rapid delivery have been waived by some of the export boards, including the Australian Wheat Board and the Canadian Wheat Board. For straight commercial purchases made through transshipment facilities in third countries, and therefore free of exporters’ political control, the net premium above market prices for food imports has not exceeded 10%. In recent years this depoliticization of food trade has even extended to concessional food shipments.

However, while the international market system offers increasing opportunities for making food more continuously available to all, protectionist policies by major trading countries restrict the opportunities for developing nations to improve their food security. Japan, Western Europe, the United States, and the Soviet bloc shelter their agricultural commodities behind often-rigid trade barriers. These reduce food security in both industrialized and developing nations by preventing cost-reducing adjustments in rich countries and amplifying production instability in poor ones. More worrisome, however, is the growing agitation for restrictions of nonfood items such as textiles, steel, and simple electronic equipment. Trade restrictions, whether by quota or other barriers, are likely to reduce the export incomes of developing countries. While protectionism can make short-term political sense to beleaguered officials, its long-run effects are to push economies back towards autarky, which inevitably increases food insecurity.

Implications for the Future

This review of the scale and mechanisms of the grain trade suggest that countries, with some confidence, can make use of the international grain market as a residual source of supplies, provided they do so judiciously. However, a grain-trading strategy is no substitute for sensible domestic production policies. Internal distribution problems in importing countries make grain imports an expensive and hazardous source of supply for all except those in major cities. Further, because the vast majority of the population in developing countries live in rural areas with their incomes dependent on farm production, imports cannot provide a long-term solution to their food security.

Similarly, a grain import strategy is no substitute for a sensible stock-holding policy. While the additions to storage capacity can be kept to the minimum required for operational purposes, i.e., to keep the pipeline full, there may be domestic political factors that justify the holding of additional reserves of grain over and above operational stocks. However, such storage is expensive, and the benefits are often more psychological than economic. Because in order to be useful, a reserve stock has to be kept full even if prices are high, there is seldom a market advantage to holding reserves. The release of grain from an official stock can be effective in buffering short-run price changes; but the amounts of storage required for this purpose are a marginal addition to those required for operational purposes, i.e., to ensure continuous supply, and such stocks need to be backed by an effective trading strategy.

There is considerable scope for developing country importers to take better advantage of international markets. Doing this requires attention to the overall internal distribution infrastructure, including point-of-entry facilities, storage capacity, and transport systems. It also requires attention to improved information systems, both internal (crop production and stock reporting mechanisms) and external (market conditions) and a system of logistics management especially for use in emergency situations. But, mainly it requires better technical use of the markets for grain, ships, finance, insurance, and risk handling. Often what is needed is not a new organization but a concerted use of hired services to handle these matters. This approach has been used successfully by a wide range of developing countries including Kuwait, Indonesia, and Zaire.

Finally, the importance of the grain trade for promoting global food security suggests a revised policy agenda, both national and international. This would include greater emphasis on the need to remove trade barriers, particularly barriers to improving the mechanisms of trade. Attention to avoiding or reducing the extent of policies which protect domestic pro-
ducers or consumers but dump greater supply or demand instability into the global market deserves a high priority. This applies especially to policies of the EEC and the United States but also to those of the USSR, Japan, and some others. Overall, the most severe shocks to the global food system have been manmade (i.e., government decisions) and are avoidable. Some progress in these areas would diminish the argument for global reserves or buffer stocks that are expensive in terms of direct holding costs and in their impact on the efficiency of the global market system, and which are likely to be extremely difficult to manage.

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