
A Symposium Sponsored By
The Federal Reserve Bank of Kansas City

WORLD
AGRICULTURAL
TRADE

**The Potential
For Growth**



World Agricultural Trade: The Potential For Growth

Proceedings of a Symposium

Kansas City, Missouri

May 18-19, 1978

Sponsored by

THE FEDERAL RESERVE BANK OF KANSAS CITY

Foreword

The Federal Reserve Bank of Kansas City is pleased to publish these proceedings of its symposium, "World Agricultural Trade: The Potential For Growth." The symposium took place on May 18-19, 1978, in Kansas City, Missouri. We believe that publication of these papers, speeches, and discussions will be of value to policymakers, students, and others interested in international agricultural trade.

A handwritten signature in black ink, reading "Roger Guffey". The signature is written in a cursive style with a large, looping initial 'R' and a long, sweeping tail.

ROGER GUFFEY
President
Federal Reserve Bank of Kansas City

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Introductory Remarks

Roger Guffey*

As president of the Federal Reserve Bank of Kansas City, I have the pleasant assignment of welcoming you to our symposium on agricultural trade. We are gratified with the excellent attendance at this meeting, because it reflects wide interest in the issues that will be discussed here. We are particularly pleased to see the representatives of international organizations and foreign countries in attendance. A meaningful seminar on world agricultural trade would be difficult to achieve without this kind of international participation.

The symposium on agricultural trade represents the first of what we hope will become an ongoing series of conferences on important economic issues. As we developed this program, our major objective was to consider an economic topic about which important public and private decisions will be made during the coming years. We also wanted the topic to be of significant concern not only to the Tenth Federal Reserve District served by this Bank, but also to the nation as a whole. A related objective was to bring together, in a suitable setting, a group of top-level decisionmakers from business, government, and academia—who have considerable expertise in the selected topic. In doing so, the symposium would serve as a vehicle for promoting public discussion and for exchanging ideas on the issue in question. We believe the program we have put together for this symposium satisfies these criteria.

Agricultural trade is likely to be an important policy issue in the period ahead because the future prosperity of U.S. agriculture will depend largely on the maintenance and expansion of agricultural export markets. Moreover, the United States and its trading partners are presently engaged in multilateral trade negotiations that will determine the new environment in which trade will occur during the next few decades. The American farmer has a major stake in these negotiations. Indeed, agricultural exports are important to all Americans — providing jobs in a wide range of occupations, stimulating economic growth, and earning much needed foreign exchange.

The title for this symposium — World Agricultural Trade: The Potential for Growth — raises several economic policy questions. Will the struggle to feed a hungry world result in more exports for U.S. farmers, or less? What are the implications for U.S. trade if the developing countries have a comparative advan-

*President, Federal Reserve Bank of Kansas Crty.

tage in agricultural production? Can the food shortage problem in many parts of the world be solved with greatly expanded food-aid programs? Is the issue of expanding agricultural trade an economic problem — or a political one as well? Other important questions could be asked. Our speakers have all made impressive contributions to the current store of knowledge about agricultural trade. Thus, their presentations — and the discussions during this symposium — hopefully will clarify some of these issues and lead, in turn, to a **greater** understanding of world agricultural trade policy alternatives and more informed policy judgments.

Introductory Remarks

Harold W. Andersen*

Holding this symposium on world agricultural trade in Kansas City, in the great American heartland, is certainly appropriate. There are few other, if any, regions in the world that are so productive agriculturally. It follows that this area has a great deal to contribute to what we hope will be an improving and expanding level of world trade in agriculture. It also follows that the people in this region have something substantial to gain from an expansion in agricultural exports. Thus, it is fitting that the Federal Reserve Bank of Kansas City should sponsor this program.

The people of America can take pride in the fact that we do have such a productive agriculture sector. It is true, of course, that American agriculture has been blessed by nature. But our farmers have taken that splendid potential and developed it through industry and intelligence — with the help of the research and extension activities of the land grant colleges — into the tremendously productive agricultural system that we have today. We now contribute immensely to meeting that most basic of human needs, the need for food — and we are meeting that need not only in the United States but throughout the world.

While exports have contributed importantly to the growth of agriculture in this region, the significance of agricultural trade goes well beyond the borders of our District. All of the nation's farmers have benefited from increased trade in one way or another. The national economy has profited from the expansion of agricultural trade as well, producing more job opportunities, a higher level of economic activity, and fewer balance of payments problems than we would have had otherwise. In addition, we should acknowledge the impact that U.S. exports have had on world economies. Living standards in many countries have been upgraded substantially as a result of our foreign shipments, although quite clearly much remains to be done before the food shortage problem is solved throughout the world.

Agricultural exports have exceeded **\$20** billion in each of the last four fiscal years. Prior to **1972**, the year of the famous Russian grain sale, our foreign sales seldom ran more than \$6-7 billion per year. Obviously, export markets have become increasingly important as a source of economic well-being for farmers. Those of us who reside in the Tenth District recognize very readily the

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value of agricultural exports to our regional economy. In fiscal 1975, for example, exports represented one-fourth of the District's total cash receipts from farm sales. Furthermore, almost 40 per cent of all U.S. wheat exports in 1975 originated in our District, and substantial sales of feed grains, soybeans, and animal products were also made from District states.

In recent years, foreign demand has increased over a broad range of farm products. Increasing world population and per capita incomes can be expected to generate demand for even more farm products in the future. But the extent to which U.S. farmers will share in this increased trade will depend largely on our trade policies and those of our trading partners. The period ahead promises to be a very challenging one for policymakers and the agribusiness community. Therefore, I commend Roger Guffey and his staff for sponsoring this symposium. .

Agricultural Exports in Perspective

Clifford M. Hardin*

As we open this Symposium on World Agricultural Trade, food is under the economic spotlight, as it has been few times in history. There are two underlying considerations:

1. The continuing problem of creating and maintaining economic prosperity among the farmers of the country.
2. How to maximize exports of agricultural products in order to provide a still greater contribution to a worsening "balance of payments" deficit — or, if you please — how to expand dollar returns from exports to pay for growing imports of oil.

There are those who look at the increase in the size of the typical American farm and the shrinking number of farmers, and who, therefore, conclude that agriculture has lost some of its political muscle. While there is truth in this observation, to stop at this point is to ignore other significant happenings. World population continues to grow at a rapid rate as does individual affluence in more and more countries, developing as well as developed, creating a continuously rising worldwide demand for food.

The American farmer, with his high efficiency and total productivity, has made this country the breadbasket of the world. Agriculture is one economic area, and one of the few remaining, in which we can compete successfully with producers anywhere in the world.

These forces have come together to create a growing public interest in the food supply. Even as late as five years ago, it was hard to get a non-farm audience to sit still for a discussion on food. How times have changed! Concern for food, which at times has bordered on panic, is unprecedented in the history of this country.

We hatched a whole new flock of "instant food experts" — many of whom had never studied food before — and some unbelievably naive things were said and written. But out of all of this, some positive things are occurring. What happens to the weather in Middle United States is noted with concern by peoples on all con-

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tinents. This new interest in food, along with a new and unprecedented **pre-occupation** with human nutritional requirements, seems destined to continue for **several** years into the future. The critical issues have been surfaced, and there is a desire to discuss them openly.

In this paper, I am going to direct my comments primarily to three aspects of the world food picture which I hope will set the stage for the more specialized papers which are to follow. I will discuss first the commercial demand for U.S. farm products — that which is represented by countries with access to foreign exchange who can enter competitive world markets and buy what they want or need. Second, I will discuss the pattern represented by countries with huge nutritional needs and exploding populations who do not produce enough to feed themselves adequately nor generate sufficient foreign exchange to buy what they need.

Third, I will address the school of thought that advocates that we should do something deliberately to limit livestock production, and thereby, make grain available for the export market and for the hungry people of the world. This thesis is likely to be advanced with vigor the next time there is some kind of food crisis.

Now let us focus our attention on commercial demand. The commercial worldwide demand for U.S. farm products has been rising generally over the period of the past two decades and will continue to rise into the **decade** of the 1980's and beyond. When the peaks and valleys are averaged out, farm exports from the United States rose about 5 per cent per year over the 20-year period beginning in 1950.

It seems to me that the potential exists for farm exports to experience annual increases during the next decade that might average as much as **6** or **7** per cent, calculated in constant dollars.

Obviously one of the major forces lending strength to world demand is the growth in population. While most of the growth in number of people will be in the developing countries that are nearly always short of foreign exchange, there still will be some population growth in the developed world, perhaps as much as one per cent per year.

The major force in the growing commercial demand for food is rising affluence. In many countries, incomes of at least a portion of the population are rising and causing an almost automatic and immediate demand for more and better foods for those who have the money — whether they live in developed or developing countries, and whether they live in Europe, Africa, or Asia.

As income levels increase, people start climbing what has been termed the "food ladder." People with the lowest incomes live typically on diets that are high in starch — rice, corn, root crops. Such people crave vegetable oil in their diets, and they buy it when they can afford it. Next, they want protein, including meats.

And finally, they want some of the more luxury-type items — fruits and vegetables out of season, and many of the refined types of foods that exist in the modern supermarkets of the Western World.

This pattern of food preference seems to exist with peoples of all *ethnic and geographic backgrounds* and *all levels of economic development*.

Take, for example, Japan — whose staple food historically was rice. As the Japanese economy has grown and Japan has become one of the industrial giants, individual incomes have increased, and the Japanese people are climbing the rungs of the food ladder in a predictable pattern. First, following World War II when they were surviving on rice, they greatly increased their consumption of vegetable oils, partly through massive imports. Then they increased their consumption of vegetable proteins and began to develop a broiler and livestock industry. In the past few years, in order to support the expanding livestock industry, they have become the world's largest importers of soybeans and feed grains. More recently the Japanese have become interested in the use of soy proteins to extend their supply of fish paste products, such as the kamabokos, at a time when fish supplies are reduced due to the imposition of the 200-mile fishing limits.

We are seeing this same rising demand for animal protein in both Western and Eastern Europe and in Russia, and this lies behind the growing import demand for soybeans and feed grains. It also lies behind the recent interest of the Eastern Bloc countries in the importation of isolated or refined soy proteins to extend their sausage supply even further. Less developed countries, likewise, are changing their food patterns as incomes rise, and they are adding their weight to total world demand.

Further adding to the strengths of world markets is an apparent decision of Russia and some other countries to depart from their traditional pattern in short crop years — that of tightening their belts and toughing it out. Their pattern now seems to be to enter world markets and buy, rather than cut back in consumption.

The trade potential of the People's Republic of China remains an unknown. Their leaders have indicated that they expect China to be a "full participant" in the industrialized world by the year 2000. With that kind of objective vigorously pushed, China could also become a major importer of food.

We need to add to this demand the continuing purchases that will be made by the PL 480, Food for Peace Program, the purchases for food aid by other countries, and the purchases for relief feeding by various United Nations groups.

I have emphasized the positive forces. There clearly are some negatives. Countries with limited foreign exchange sometimes are forced to choose between food and oil. If oil prices should continue their steep climb, the total demand for food would be reduced. On the other hand, if the oil cartel should become less effective and oil prices were free to seek a competitive level, the demand for food would be further increased.

So long as non-recourse loans are used as part of the mechanism for supporting grain and cotton prices, there is risk that the program can interfere with maximizing exports. The level of price supports is the key. Whenever loan levels are above world prices for any extended period and ownership transfers to the Com-

modity Credit Corporation, there can be interference with export flow. This situation was a serious problem with cotton in the late 1960's.

I am sure that other speakers will deal with the possibility of trade restrictions, the impact of greater production of grains and soybeans in Brazil and Argentina, and the ready availability of export credit sources. I am sure also that other speakers will deal with the question of whether our technical assistance programs may succeed so well as to develop export competitors for U.S. producers. I will say only that if this should occur, total demand on balance will be further enhanced.

It is my judgment that the American farmer will be able during the 1980's to produce enough to satisfy at reasonable prices the rising worldwide commercial demand for the crops we grow for export — at least in most years. We must recognize, however, that because of the vagaries of weather, there will continue to be shortages of some crops in some years and surpluses in others.

It is possible that by the end of the 1980's, we will be straining our production capabilities. Much will depend on our ability to continue to increase yields, on whether price and profit opportunities will cause additional but less productive land to be utilized, on costs of energy and other production inputs, and on the general availability of water for irrigation purposes.

Now let us turn to the "Other World."

Two-thirds of the world's people live in developing countries with burgeoning populations. Malnutrition is still rampant and the gap between the "haves" and the "have-nots" is still large.

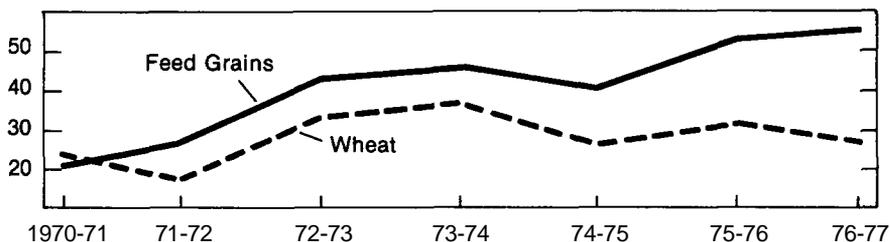
The United States and other developed countries simply cannot begin to produce enough to meet the real nutritional needs in the world. They could not produce that much food even assuming some magic way could be found to finance it. If starvation and malnutrition are to be stemmed, the developing countries simply have to learn how to produce more on their own soil. There is no other way.

But, wouldn't it help, really, if we in the United States were to reduce our consumption of meat and release grain for consumption in the developing world? The answer is, no! To the extent that we reduced the commercial demand for grain and lowered prices, we would be signaling to farmers to reduce output in future years.

I recall vividly in late 1971, when we still had large surpluses of grains as we do today, of discussing whether any way could be found to get those surplus stocks to people who needed them — and, beyond the PL 480, Food for Peace Program, and some of the special church programs, there was no way. There still is no way unless food aid can be expanded, even though today we have large surpluses and prices are low. Hopefully, either through some of the United Nation's sponsored programs or directly, other developed countries and some of the Organization of Petroleum Exporting Countries (OPEC) will increase their financial participation in relief feeding programs to the end that, collectively, we can be more effective in responding to famines and other catastrophes on an emergency basis. Hopefully,

Chart 1

U.S. EXPORTS OF FEED GRAINS AND WHEAT
(Marketing Year - Millions of Tons)



also, we will be able to convince some of our importing customers to build storage facilities on their own shores, fill their bins in years like this one, and even out their own demands to the end that pressure on the market in short crop years will be less severe.

It is technically correct to say that more people can be fed from crops grown on an acre of land when the crops are consumed directly than when the crops are fed to livestock. Even so, I am going to attempt to demonstrate that the existence of a strong livestock industry in 1974 actually helped to alleviate the world grain shortage in that period, and that in the future, the U.S. livestock feeding industry can itself be regarded appropriately as an effective part of a world grain reserve, and an aid to the maximizing of grain exports.

But let us go back to 1974 and examine what happened.

The first chart shows exports of feed grains and wheat between 1970 and the crop-marketing year that just ended. You will note that the increase in feed-grain exports has been dramatic — going from about 21 million tons in 1970-71 to 56 million tons last year. The growth in exports of wheat are not dramatic, but they are still up on a trend basis by about 5 per cent a year. You will note also the modest drop in exports of both feed grains and wheat in the year following the short crop in 1974.

Let us look now at Table 1. Total feed grain production in the United States in 1974 was down *17 per cent*. Now let us examine how the U.S. livestock industry responded to this shortfall. Between December 1974 and November 1975, the pig crop was reduced by *15 per cent* from the previous year. By January 1, following the short harvest, the number of beef cattle on feed was reduced by *26 per cent* from a year earlier and by April 1, 1975, further reduced by *31 per cent* from the preceding year. Total feed grain use in this country from harvest to harvest was actually reduced by *24 per cent*. Yet exports of feed grains were down by only *10 per cent*. Clearly our feeders did adjust quickly and effectively, and because they did, the impact on the rest of the world was less severe than it otherwise would have been. Incidentally, wheat exports were cut more severely than feed grains,

Table 1

**GRAIN & LIVESTOCK - PRODUCTION AND EXPORTS
1974-75 as Per Cent Change from Year Earlier**

Feed Grain Production, 1974	- 17%
Pig Crop (Dec.-Nov., 1974-75)	- 15%
Cattle on Feed	
January 1, 1975	- 26%
April 1, 1975	- 31%
Feed Grains Fed in U.S. *	- 24%
Exports of Feed Grains'	- 10%
Exports of Wheat*	- 16%

*Marketing Year, Tons

perhaps partly because there was little wheat being fed to livestock and there was, therefore, no livestock buffer to draw on.

"But," someone may say, "if you hadn't had all that livestock in the first place, we could have fed still less and helped the world more." Again the answer has to be, no! We expanded our grain producing base in this country in response to a growing consumer demand for meat and other animal products. In the absence of that kind of strong and continuous demand for grain to feed livestock, the acres devoted to feed grain production would have been much smaller, we would have had the same weather, and fewer livestock to take grain away from. Our contribution to the world grain shortage would have been significantly less.

Moreover, without our large livestock population, especially the ruminant animals, we would not be able to convert the tremendous quantities of pasture, forage, and other coarse materials that are available in this country into human food. Also, ruminants can be shifted quickly to roughage feeds in times of grain shortages or high grain prices. In other words, *they act as a "surge tank" in the food line.*

It works the same way in a developing country. Since Biblical times, animals have been used as a buffer against crop failure. Professor Donald Paarlberg¹ writing in 1968 on this subject states as follows: "A big adjuster is livestock — If the food supply is reduced, we eat the livestock and then eat the crops the livestock otherwise would have eaten. The potential of this adjuster is enormous. Not all countries have this shock-absorber in their food supply. The United States has it . . . some countries . . . have long been so near the margin of want that the livestock population is very small and there is little cushion to avert disaster."

There is evidence that more and more of the developing countries are adding some livestock to their economies. Over the period of the 1970's, feed grain use in the United States and the other developed exporter nations has actually dropped. (See Table 2.) In the same period, there have been significant increases in feed grain usage in Japan, Western Europe, and the Central Planned Countries. The lar-

Table 2
FEED USE OF GRAIN

Country/Region		1960/61- 62/63	1969/70- 71/72	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78
In Millions of Metric Tons									
I.	Developed Countries	187.9	252.1	274.2	272.5	232.4	241.4	246.8	256.7
	United States	110.8	136.5	148.1	143.3	107.2	118.1	117.0	125.0
	Other Developed Exporters	13.0	20.7	22.5	22.8	19.5	20.3	20.7	20.9
	Western Europe	60.6	85.6	92.0	93.8	94.1	91.2	95.8	96.9
	Japan	3.5	9.3	11.6	12.6	11.6	11.8	13.3	13.9
II.	Central Planned Countries	77.5	143.8	164.4	168.8	176.6	157.9	177.0	182.5
	Eastern Europe	28.8	46.5	58.5	55.5	61.8	60.1	61.5	62.0
	U.S.S.R.	40.7	84.3	93.9	99.3	100.8	82.8	101.5	105.5
	People's Republic of China	8.0	13.0	12.0	14.0	14.0	15.0	14.0	15.0
III.	Developing Countries	17.3	29.5	32.0	35.8	36.0	39.9	41.8	42.5
	Mexico/Central America	.8	3.0	3.1	4.3	4.6	4.9	5.1	5.2
	South America	10.8	17.6	18.1	21.7	20.0	20.0	20.6	20.9
	Argentina	3.6	5.2	5.8	6.4	5.3	5.4	5.7	6.0
	North Africa/Middle East	4.5	5.9	6.1	5.3	6.6	9.1	10.2	10.0
	Other Developing Africa		.1	.1	.1	.1	.1	.1	
	South Asia	.4	.7	1.1	1.3	1.1	1.4	1.2	1.1
	India	.3	.6	.7	1.0	.7	1.0	.9	.8
	Southeast Asia		.1	.2	.2	.3	.4	.5	
	Thailand		.1	.2	.2	.3	.4	.5	
	East Asia	.7	2.1	3.3	2.9	3.3	4.0	4.1	4.5
IV.	Rest of World	—		—	—	—	—	—	
	Total Above								
V.	World Total (million metric tons)	282.7	425.4	470.6	477.1	445.0	439.2	465.6	481.7

gest relative increases have occurred in the developing countries, especially in Mexico and Central America, South America, North Africa, and the Middle East.

The American people are compassionate and generous, and many among us would be willing to eat less meat themselves if it would mean more food for the needy of the world. But the system simply doesn't work that way unless someone is willing to buy the grain from our farms and pay the shipping costs. Until that happens, it continues to lie in our bins and granaries — as is happening today.

What, then, is the answer? Is there really any solid hope for the developing countries? The answer is that there is indeed a basis for hope. Some of the developing countries are indeed producing more food, and quite successfully.

It is my conviction that there are sufficient food-producing resources and technology in the world today to provide for the feeding of whatever number of people may live in the world in the year 2000 better than mankind has ever been fed. This is not a prediction, but rather a statement of potential that can be realized if the majority of developing countries can do as well as a few have done already. It assumes that much, perhaps most, of the essential increase in food production will come from the soil of the developing countries themselves. It assumes that the technical assistance from the developed countries will be forthcoming in amounts and effectiveness greater than in any period of the past. And, finally, it assumes that local policies and programs will be adjusted sufficiently to assure the success of this technical assistance and sustained increase in food production and distribution.

The Green Revolution, contrary to some reports, has been highly successful in every country where local leaders have given it a chance. But too often, country leaders "short term" it by giving in to urban pressures for cheap food. If this happens, and farm incomes drop so farmers can no longer afford to buy fertilizer, seed, and water, food production may actually decline.

I hope the United States will continue to stand ready to assist the peoples of any developing nations to help themselves to increase food production, and to plan more effectively their population growth — provided there exists a sincere desire for this help and a willingness to make the necessary local commitments. In other words, I do not believe that we should write off automatically any nation as a "basket case." I hope, too, that we in the United States will always have the ability and the desire to respond to people everywhere who are in need because of famine or other catastrophes.

It is evident, also, that the likelihood of success in feeding the world's increased population in the year 2000 will be enhanced by whatever progress the developing countries can make in reducing their rates of population growth.

We are — or at least can be — in a position of strong leadership in food matters. We should not use food as a gun, as the OPEC nations have used oil. That isn't our style and it wouldn't work. Yet, this strong position in the food field has the potential of becoming a significant part of the Nation's campaign of "waging peace" — if used carefully and intelligently.

It is my belief that the high efficiency of our agriculture, our great productivity, and our body of technology have tremendous potential for improving the lot of mankind, and, properly positioned and intelligently used, for promoting peaceful relations among nations. All this is in addition to **making** a strong contribution to the U.S. Balance of Payments, providing a dependable supply of wholesome food for the American consumer, and hopefully, in a manner that will provide improved incomes for those who produce the food. Food can make the difference!

Note

1/Donald Paarlberg in *Overcoming World Hunger*, ed. by Clifford M. Hardin (Englewood Cliffs, N.J. Prentice-Hall, Inc. 1969).

World Trade and The Small Farmer: Can They Co-Exist?

Senator Thomas F. Eagleton*

Many's the speech that begins with the speaker telling his audience how delighted and honored he is to be speaking before them: At the risk of sounding trite, however, I would like to repeat that opening today. As many of you know, I am a city boy from South St. Louis, and for most of my life my knowledge of agriculture has been little more extensive than knowing which end of the cow makes the moo and which ends makes the milk. A little more than a year ago, however, I had the opportunity to assume the chairmanship of the Senate Agriculture Appropriations Subcommittee. Since that time, I assure you that I have learned a great deal about American agriculture above and beyond my extensive knowledge of cows. However, my year of study notwithstanding, I still consider myself quite a novice in this field, and so it is a great honor for me to appear before such a prestigious group of experts on world agricultural trade.

The development of America's foreign agricultural trade in this century is, as you know a ringing tribute to the productivity and skill of the American farmer. Just 40 years ago — in 1938 — grain yields in this country were no higher than yields in the so-called "underdeveloped" nations. We all were producing about 1.15 metric tons per hectare. The United States, at that time, was a minimal force in the world food market. Our grain exports totaled only 500,000 metric tons per year, compared to 9 million tons being exported by the Latin American countries.

How dramatically that situation changed in 1970, however! By the 1969-70 crop year, American farmers were wringing 86 per cent more grain from each hectare, with an average yield of 2.14 metric tons. Our growth in exports was even more spectacular — up 80-fold, to 39.8 million metric tons a year. In the same period, the developing nations of the world had increased yields by only 22 per cent. Exports from Latin America, which had been 18 times the U.S. product in 1938, had dropped to 3.2 million metric tons — less than 10 per cent of our overseas sales.

By 1977, the American farmer truly had arrived in the arena of world commerce. Almost one of every three acres of U.S. production was going into the

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world marketplace. Two-thirds of our rice, more than one-half of our wheat and soybeans, one-third of our cotton, and one-fourth of our feed grains were sold overseas. We supplied **64** per cent of the world's feed grain, one-half of the oilseed, **40** per cent of the wheat, and one quarter of the world's rice. The sale of agricultural goods grossed our country **\$23.7** billion in **1977**. The world depended on us for a reliable source of food, and we depended on the world for a reliable market for our agricultural production.

The American farmer's new-found prominence as master of world agricultural trade had not been won without some hard economic lessons, however. His schooling began in earnest in **1972**, when worldwide crop failures threatened to bring on a global famine. As the law of supply and demand came thundering into play, export prices for American grain shot up and reserves dwindled. In **1973**, the Russians engineered their now famous grain deal, buying up far more wheat than should have been allowed at prices subsidized by our Government. Stockpiles dwindled further, and by **1974** the domestic price of wheat was up from a previous low of **\$1.57** per bushel to a heady high of **\$4.48** per bushel.

The response among farmers and Federal agriculture officials was euphoric. "Low prices are a thing of the past," Secretary Butz told the farmers. "Plant fencerow to fencerow," he urged. The farmers, hearing exactly what they wanted to hear, took Mr. Butz up on his disastrous advice, thereby sealing their own hard fate for the years ahead.

For as we all remember, the boom was short lived. The Ford Administration, in a dizzying about-face, **responded** to consumer pressures by slapping an export embargo on all of that new wheat the farmers had grown for Mr. Butz. Weather conditions around the world took a turn for the better, crops improved in other nations, and the unusual demand for American wheat disappeared. And, to top it all off, the Arabs came up with an embargo of their own, driving the cost of petroleum forever upward and contributing heavily to a **50** per cent increase in agricultural production costs.

The predictable result — predictable, it seemed, to almost everyone except Mr. Ford and Mr. Butz — was that prices plummeted almost as swiftly as they had risen a couple of years before. **\$6** per bushel wheat suddenly was selling for as little as **\$1.80**. Grain reserves nearly doubled. The farmer who had been paying **\$2.50** per bushel to grow \$5 wheat now was paying **\$3.50** a bushel to grow **\$2.50** wheat. Farmers who had so enjoyed learning about the demand side of the economic curve a little earlier now were finding the supply side catastrophic. Especially hard-hit were the young and small farmers who had gone heavily into debt to buy land and equipment at inflated prices in hopes of cashing in on the boom, only to see their dreams vanish in a sea of red ink.

How can congress-react to this predicament? What are we to say to the thousands of farmers who have come pounding on our doors demanding relief?

This was the situation that brought thousands and thousands of farmers **trac-**

torcading into Washington this past winter. They came to besiege their Government, and to demand relief from low prices. It was a rare sight in the nation's capital, but not an unprecedented one. Once before, in 1930, America's farmers had moved en masse on Washington seeking price relief. The Government responded to their pleas in 1930 with the passage of the Smoot-Hawley Act, imposing heavy tariffs on a wide range of industrial and agricultural imports.

Like the wheat price boom of the early '70's, the Smoot-Hawley Act brought temporary joy to American farmers. Soon, however, the price of protectionism had to be paid. By 1933, foreign industrial sales of U.S. goods had dropped 73 per cent from their previous four-year average, while agricultural exports dropped 67 per cent. The promise of recovery had faded into more years of depression.

I mention this bit of history because of what I sense as a disturbing trend in world trade today, and that is a trend toward a return to protectionism. A recent article published in *Dun's Review* illustrates how this applies to agriculture. The article describes the new vigor with which the French are mounting an assault against American soybean imports. They have proposed that the Common Market impose minimum prices and tariffs on all imported protein. In addition the French propose to offer new financial incentives to European farmers to boost home production of soybeans, linseed, and other protein crops. As all of you know, 'a substantial reduction in soybean exports to the EEC would impact heavily on the U.S. soybean market and U.S. soybean producers.

We also recently have witnessed the struggle Ambassador Strauss encountered with the Japanese in attempting to open that market to increased exports of U.S. beef and citrus products. The limited success he has had is evidence of the continuing zeal with which the Japanese government will protect its agricultural producers even to the detriment of its consuming public.

We all are likewise painfully familiar with the ability of the Australians and Canadians to enter the world wheat market at a price just lower than that attainable through the U.S. free markets assuring our farmers the position of residual supplier.

Of course, the other nations of the world do not have the market on protectionism cornered. As anyone who has been around Washington during the past year can tell you, we are seeing in our own country a rising demand for protectionist tariffs and quotas on everything from nuts and bolts to color televisions.

If we are to stay true to our commitment to a free market system, we cannot allow restrictive trade practices such as these to occur on a broad scale. It is the nature of our trading system that actions in the world marketplace reflect immediately on our domestic market. Major protectionist initiatives abroad soon will be felt at home, both by farmers and by consumers.

On the other hand, we have seen that we neither can allow our farmers to remain completely at the mercy of the unstable world market with its boom and bust prices. To do so would result in a further constriction of our base of farm produc-

tion, which already is drastically shrunken. In 1960, for example, only 15 per cent of our farms accounted for 60 per cent of **farm** production. Today, that dangerously lopsided **ratio** is even more perilously out of kilter, with only 6 per cent of our farms providing 60 per cent of production. If this shrinkage of the production base continues, if we continue to allow gyrations in world prices to drive small farmers out of business, it could spell the end of what remains of our free-market farm economy.

The eventual middle ground, I think, is likely to be found in a greater Government effort to promote market stability. Already, we have taken action to develop a farmer-held grain reserve. We have legislation pending to create an international wheat reserve. We are continuing our search for the balance of Government participation which will best protect both producers and consumers.

This task will become even more difficult as we expand further into the world market, which is something we must do to assure continued prosperity for the farm economy. The more we rely on foreign trade, however, the more closely our own domestic food market will become tied to demand and price fluctuations worldwide. If, in the meantime, we have not acted effectively to stabilize the marketplace, we could again see the kind of clamor for massive Government involvement demonstrated by the American Agriculture Movement this past year.

Farming by its very nature is a cyclical business. Some years are good, some years are bad, some are in between. The American farmer never will have a guaranteed profit, and I really don't think that he wants one. What he does want, and what he deserves, is simply a measure of stability in prices and stability in markets. It is within our power as policymakers and as traders to give him that stability, and the sooner we achieve this goal the better off we all will be.

World Food Production Potential and Constraints Upon it

. Earl O. Heady*

It is useful that these deliberations on world food supplies and trade are held in a year when agricultural production and commodity stocks are large in the United States. We need to be concerned continuously with food supplies, and not just sporadically when there are crop shortfalls in some world regions. Leaders in this nation and other countries seem to go through a frenzy cycle relative to world food problems. The peak of the frenzy cycle comes when crops are poor in some world regions, grain prices increase dramatically in world markets, and large groups of people suffer intensified malnutrition. The trough occurs when grain supplies are large and domestic prices are low. We then turn away from long problems of world food supplies and become more concerned with price supports and restrained production in the United States. Peaks of the frenzy cycle occurred during the early 1950's with the fifth-plate concern, in 1966-67 with **drouth** on the Indian subcontinent, and following 1972 with large crop shortfalls in Russia and parts of Africa and Asia. By the late 1950's, national concern was on land bank and other means of reducing food supplies. Following Secretary Freeman's relaxing of supply controls in 1967, large U.S. production and depressed farm prices in 1968 probably finalized the victory of **Nixon** over Humphrey by a slight margin in the Midwest. And by the fall of 1977, Secretary **Bergland** was already proposing a reduction by 20 per cent in wheat and 10 per cent in feed grain production in the United States.

As long as our concerns follow this oscillating and transitory pattern, we are unlikely to develop sustained long-run solutions to the world's food problems. This cycle itself is one of the restraints on improved world food supplies. Hence, it is useful that institutions conduct conferences such as this to keep the dialogue alive

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even during periods of large domestic production and temporarily relaxed world food problems.

Potential Sources of Increased Production

The assignment given this paper is an analysis of potentials in world food production and the effect of resource, market, and policy restraints upon them which hold world food supplies in check. For an orderly analysis it is useful to first inventory the potential sources of increased food production and then evaluate the restraints. There is basis for optimism for meshing world food supplies and demand over the next 40 years if restraints on both institutions and market relationships are identified and eliminated through appropriate policies. The picture is still not unlike that disclosed in our basic study nearly a decade back [2]. However, appropriate policies, particularly those relating to population growth, must be exercised soon and effectively if the world is not to become enmeshed in a pincer from which it has no ready escape.

Some major means of increasing world food supplies include the following: (a) By increasing yields through improved technologies such as high yielding varieties, crop fertilization, pest control, improved water management, etc., by means of research, technology transfer, and education: As explained later, opportunities for thus increasing yields are generally highest in the developing countries where yields currently are low compared to developed countries. (b) By more intensive use of currently cultivated land, through multiple cropping, intercropping, and related means that more efficiently use available rainfall and solar energy: There is considerable opportunity here, especially with potential development of water supplies and changes in water management, laws, and pricing. The possible gains from this source have been well-illustrated in Taiwan, the Indonesia intercropping system, and research at the International Rice Research Institute. Generally, the less developed countries have climates **with long** or year-around growing seasons, conforming with multiple cropping possibilities and flexibility in cropping seasons. (c) By bringing uncultivated land into production: There still are sizable areas evidently that are not under crops and a considerable area devoted to shifting cultivation. Uncultivated land prevails in considerable quantities in the savannahs of South America, the Amazon Basin, large parts of the bush in Africa, and outer islands of Indonesia and Malaysia. It has been estimated [7, 10] that of potentially arable land, only 22 per cent of that in Africa, 11 per cent of that in South America, and about 45 per cent worldwide is now under cultivation. The Wageningen group [6] estimates that whereas 1,406 million hectares currently are in cultivation, some 3,419 million hectares potentially are arable. They estimate that irrigated land could be increased from 200 million to 470 million hectares. Another estimate puts the world's potentially arable land at 9,000 million hectares [8]. While these figures are too optimistic, and use of some fragile lands could cause environmental

deterioration, land is not a scarce resource in all parts of the world or there would be less shifting cultivation. Even the United States has a considerable amount of land that could be brought into grain cropping under sufficient capital investment and under sustained high commodity prices. Estimates suggest that there may be as many as 265 million acres which could be converted to the equivalent of capability Class I-III land, with 150 million acres having good potential for conversion [9]. Capital requirements are, of course, heavy for leveling tropical jungles, controlling second growth, and maintaining soil fertility. Other problems of forest soils, processing facilities, and markets also prevail in some of these locations. FAO estimates [3] that an additional 53 million hectares of new land could be cropped in 10 years at a cost of \$26 billion at monetary values of the early 1970's. Another 46 million hectares could be renovated and improved for \$21 billion and irrigation schemes could be developed on 23 million hectares for \$38 billion in 10 years. These costs would be \$8 billion annually over a 10-year period (under monetary values of early 1970's). While these figures suggest feasible expansion in the arable land base over the future, greatest potential for increased food production is in improved technology and intensification of production on lands already cropped. (d) By saving a greater proportion of crops that are produced: Estimates indicate high losses, especially in less developed countries, to rodents and birds and through spoilage in inadequate silos and granaries. (e) By diverting a greater proportion of grains from livestock consumption to human consumption: This is, of course, a complex and debatable alternative [24]. In general, it implies shifting a greater proportion of the world's grain consumption, from the rich countries where per capita consumption of meat is high, to the poorer countries where per capita direct consumption of grain is high and grain consumed through livestock is low. Since this is a controversial source of increased food availability for the world, policies to implement it are not likely to be initiated soon. It could, of course, be implemented through two extremely different mechanisms. One would be a set of "outright rules" that prevented grain feeding of livestock, except in cases where the procedure allowed a greater conversion of waste forages or other materials into food. Use of this approach is unlikely. The second would be through economic and market institutions. If per capita incomes over the world suddenly could be raised to the level of England, for example, consumers in Asia, Africa, and South America would bid the price of grain to be used as food so high that grain feeding of livestock would take a drastic decline. World grain supplies then would be spread more evenly among consumers worldwide, greater food availability from existing resources would prevail, and population could advance a few more steps — until it finally struck the restraints of a world of grain consumers and vegetarians.

As mentioned previously, the most promising manner for increasing food production likely is through land already in cultivation. The opportunities here are still considerable: The developed market economies produce 60 per cent of the world's grain production on 36 per cent of the world's grain area; the developing countries

produce only 40 per cent of the world's grain supply on the other 64 per cent of the area [21]. The capability of the world to produce more food also is apparent from comparison of yield trends in developed and developing countries. In the period 1934-38, grain yields averaged 1.15 tons per hectare in developed countries and 1.14 tons in developing countries — practically the same yield. In the period 1973-75, yields in the developed countries averaged 3.0 tons while the developing countries had 1.4 tons [16]. Of the industrialized countries, only Japan had significant increases in grain yields in the 19th century. In the last 25 years of that century Japanese grain yields increased from 1.3 tons to 1.9 tons per hectare. Otherwise, most of the yield increase in industrialized countries has occurred in the last 40 years. Before 1940, grain yields in the United States averaged less than 1.5 tons per hectare, but in recent years have been 3.5 tons. There is little reason why developing countries cannot do as well or better than developed countries, particularly since the former are largely in tropical climates with opportunities of multiple cropping while the latter are mostly in temperate climates.

The 1930's was a period in which only a small amount of chemical technology was being used in the agricultures of both developing and developed countries. Improvement in varieties and use of hybrids was modest everywhere, as compared to developments since then. An important reason for these differences in yield trends has been investment in agricultural research and education. This was the basis for the early Japanese gain in land productivity [13], and especially for the United States in the last four decades.

With yields in the developing countries less than half those in developed nations on an equal cereal acreage, the physical potential for increasing world food supplies is quite obvious. Water resources now used for irrigation over much of the developing world are deployed inefficiently. Improving the physical, legal, and economic conditions surrounding water use could add a considerable increment to food supplies. Further development of water resources also could add to food supplies. Land reclamation, to bring a greater area under cultivation, could proceed a long ways in increasing food supplies. How far it *should* proceed depends on the supply price which the world's consumers are willing to pay for food and the trade-offs implied in producing more food for more people relative to other investment alternatives on behalf of humanity. Certainly much more food could be produced on land not now cropped if humanity were able to make the needed investments and to drive the supply price of food high enough. It will probably do so if per capita incomes and population in the developing countries increase sufficiently and simultaneously. Under certain conditions of growth, however, developing countries are going to have to face more directly the trade-offs among major competing alternatives such as (a) continued rapid population growth, investment in land reclamation, and high marginal supply prices for food, or (b) reduced population growth, greater investment in education, other human capital, housing, health facilities, etc.

Aggregate Production Possibilities

A number of studies have projected world food production into the future. The Wageningen group [6] is highly optimistic for the long run and estimate the absolute maximum potential food production to be almost 40 times greater than that of current production. Our own projections [2] while less optimistic also provide favorable possibilities for the next 30 years, a period in which the developing countries could begin to "get their house in order" for reducing population growth rates. These data, estimated separately on a country-by-country basis then aggregated, cover the world except for China, North Vietnam, and minor areas. (In a set of estimates including China and both its supply and demand potentials, the possibilities under the several combinations of alternatives are qualitatively the same — deficits being accentuated under high demand variants and balances remaining relatively favorable under high land bounds and restrained population growth.) We present data for cereals only since outcomes for other products are similar under each set of alternative futures. Estimates allow food consumption cereals to grow with income and population either directly through human consumption or indirectly through livestock consumption.

Table 1

ESTIMATED WORLD FOOD DEFICIT (–) OR SURPLUS OF PRODUCTION (+) OVER DEMAND OR REQUIREMENTS, UNDER ALTERNATIVES IN FOOD DEMAND AND SUPPLY VARIABLES FOR YEAR 2000 (1 000 METRIC TONS)*

Population Level	Constant Per Capita Incomes	Historical Rate of Growth in Per Capita Incomes
Low Land Bounds		
Low	302,191	177,069
Medium	158,248	– 22,989
High	43,193	– 132,801
High Land Bounds		
Low	322,988	137,876
Medium	179,055	– 2,182
High	64,000	– 11,914

*Derived from tables 10.09-10.20 of Leroy L. Blakeslee, Earl O. Heady, and Charles F. Framingham, *World Food Production, Demand and Trade*, Iowa State University Press, Ames, 1973.

Under the most unfavorable circumstances of high population and income growth and low land bounds, world cereal production would fall short of con-

sumption requirements or demand possibilities by 132.8 million metric tons in the year 2000.' With low population and income growth and high land bounds, our projections even suggest that a world surplus of food commodities could prevail. With only medium population growth, a controversial upward trend in per capita food consumption and agricultural productivity and cropping of favorable available land, projected world food requirements could approximate (only slightly exceed) world production possibilities. The recent estimates by Rojko *et al.* conform generally with these projections [21].

Not all estimates of future supply-demand balances are so optimistic. The Club of Rome [19] presents a dark outlook under any scenario. The IFPRI [15] estimates for developing market economy countries alone indicate a 10 per cent gap between production and "needed food consumption" within these countries in 1990 if per capita consumption levels remain at 1975 levels. The gap within these countries between production and demand in 1990, with income growth at high levels, is estimated at 21 per cent. This gap would arise under trend increases in production and does not suppose any step-up in converting land not currently cropped to arable conditions, accentuating the rate of developing or improving irrigation, in multiple cropping, or technological improvements. The deficits stated refer to those within the developing market economy countries. They represent projections of what may happen under ongoing production and population trends. They are not a prediction of what will happen. The projected deficits also could, for example, be offset partly or entirely by imports by surplus-producing developed countries.

Restraints in Attaining Production Potential

To be optimistic with respect to *how* much food can be produced is not being optimistic with respect to *how* much will be produced. How much will be produced from available arable land and water resources depends on the implementation of appropriate policies that impinge on food production in the developing countries. To a large extent, augmentation of food supplies in them does not involve new or mysterious processes. It requires processes which are already known in executing agricultural research, in investing in land and improved water development, in keeping agricultural production profitable, in augmenting input supplies and related steps. But administrators and politicians in developing countries must be serious in applying appropriate policies so that these processes are executed.

The task of selecting and implementing appropriate policies should be easier in the future than in the past. And some important progress was made in recent decades. Over the period 1960-75, cereal production in the developing countries increased at the rate of 3 per cent per year, considerably above the population rate of 2.5 per cent. In the period 1960-66 some 56 per cent of the increase came from expansion of land area; during 1967-75 nearly 70 per cent came from yield increases.

With the potentials summarized earlier, it would seem that as much or more could be accomplished in the next two decades. Developing countries are better supplied with trained and experienced manpower and administrators than they were in the 1960's when most were only a few years detached from colonial administration. Of course, fluctuating political conditions and remaining restraints in the number of trained planners and administrators can serve as an important barrier in many.

To be optimistic on the ability of the world to produce enough food to keep up with population increases and eliminate a good share of the existing malnutrition over the next 30 years does not solve the longer run problem of high birth rates and population growth over the next 100 years. But the world does have a period of 30-40 years in which to gear up programs which reduce birth rates. The variables involved are complex and they must be tackled with greater vigor immediately if population and food demand are to be reasonably restrained against food supplies in the long run. They include not only the conventional educational and technical means for reducing birth rates but also they involve increased per capita income, improving the worth of women's time, and developing social security or old-age pension programs. An improvement in the value of woman's time through education, employment opportunities, and economic and social participation is a necessary step in reducing birth rate. The opportunity cost of a woman's time must become so great that she cannot afford to produce so many children. Similarly, social security programs must be developed in all countries in order that parents do not have to raise so many children to support them in old age.

During the 30-40 years which developing countries have to attain these conditions on the side of population and demand, physical restraints are not likely to serve as the ultimate limits on food supplies. More nearly, the binding restraints are those of economic policies which prevent available physical resources from being sufficiently developed, which depress incentives to use more purchased inputs, and interfere with trade which would better exploit international comparative advantage in food production.

INVESTMENTS IN RESEARCH, COMMUNICATION, AND PERSONNEL

The earlier Japanese advances and the yield gains of the United States over recent decades resulted from investments in research whose results were then communicated effectively to farmers. At earlier times, this investment in research was made mainly by the public. In recent times, as agriculture has become more capitalized, the private sector has been equally important in researching and communicating new production possibilities to farmers. In developing countries, however, this investment remains largely a function of government enterprise. Its importance was reflected in the "green revolution" composed of improved wheat varieties, fertilizers, pesticides, and irrigation which rapidly increased wheat pro-

duction in regions such as the Punjab in India and parts of Pakistan but which has not yet swept the world.

An increase in expenditures on agricultural research is necessary if the production potential on presently cultivated lands is to be attained. The gap cannot be completely filled by the international research institutes funded by donor nations since much adaptive research is site specific. The low income countries invest only 25-40 per cent as much on research, relative to the value of production, as do the developed high income countries [4]. The international institutes can contribute greatly in more basic work such as developing genetic materials. While they provide a foundation for further improvement, developments such as these do not substitute for the adaptive research and the development of practices which are complementary with the local environment. Also, there is the possibility that existence of the international centers may lead developing countries to rely too heavily on them and neglect their national research programs.

Restraints in research stem not alone from the magnitude of investments. Related problems are those of the organization of research, the supply of trained personnel, and salary levels. While a few developing countries have a fairly large number of persons trained to the Ph.D. level, lack of trained manpower is the dominating restraint in a greater number. It is, of course, a restraint which can be overcome in the next decade if developing and donor countries are willing to make the investment. One estimate [19] indicates that 30,000 new university graduates per year are required for a sufficient agricultural research and extension system to promote agricultural development at reasonable rates. But even if the investment is made, research institutes must be able to hold newly trained personnel. Salary levels in research institutes and universities in the majority of developing countries are too low to hold young scientists and they soon move into administrative, private sector, or international employment. Other problems of research organization also exist including seniority and bureaucratic systems which discourage newly trained personnel, the concentration of research on one or two major cereals, and industrial crops with little emphasis on root, protein, and similar foods.

Hopefully, the supply of manpower, as compared to two decades back, is now large enough that a good number of developing countries can begin to pursue aggressive agricultural research programs. An event which should have spurred them to do so was the relative shortages and high prices of food during the mid-1970's. There is little evidence, however, that any quantum leaps have been made either in the magnitude of investment in or organization of agricultural research.

PRICING POLICIES

National pricing policies also have served as a restraint on cultivator investments and greater food supplies. Frequently, pricing policies have a main orientation to consumers. By keeping the real price of staple foods at a low level, they

bring gain to consumers in the short run. But in doing so they may disfavor the consumer in the long run as they make farming and innovation less profitable and discourage greater food production. A number of countries have used domestic pricing policies causing agricultural commodities to be undervalued. It has been estimated that Indian government policies since 1963 have caused rice to be underpriced, relative to world markets, around 50 per cent [22, 26]. Thailand has used an export tax on rice (termed a rice premium locally) which also has the effect of drawing down the price to farmers. With a more elastic export demand for Thai rice, the tax dampens exports and dumps a greater supply in the domestic market where demand is less elastic. Again, urban consumers gain at the expense of farmers and incentives to innovate, use more capital, and improve yields is lessened. In some countries of the Middle East and in Peru, import subsidies on food have similar effects. While consumers gain in lower food prices, this impact dampens farmers' incentives to produce. With farmers required to deliver quotas of wheat, corn, rice, and cotton to government at low controlled prices, Egyptian farmers have shifted more resources to fruits, vegetables, and livestock which do not have price controls. Food availability to the total population thus is less than it otherwise would be and balance of payments is worsened (as export earnings from cotton decline and greater wheat imports are required).

Urban consumers generally are more vocal and have much greater political clout than do the unorganized cultivators in developing countries. They are, of course, important to government administrators and politicians who wish to maintain political stability. Still, means do exist whereby staple food commodities can be priced favorably for consumers without creating disincentives for farmers. A food stamp system which allows consumption to be subsidized through government redemption of coupons is one [25].

Modernization of agriculture and improvement of yields on currently cultivated land is accomplished with biological inputs such as improved seed varieties, fertilizer, and pesticides. Profitability of farming and incentive to innovate also can be affected by policies which cause these inputs to be highly priced relative to commodities. Historically, fertilizer prices have been much higher in developing countries than in developed countries. Even now they are high in countries such as Thailand, Philippines, and Indonesia.

Much has been learned about the responsiveness of cultivators in developing countries to price over the last two decades [27]. That even small farms with illiterate operators respond positively to favorable commodity/input price ratios is well quantified. Hopefully, policy makers and administrators will heed this information and refrain from programs which cause farm commodities to be undervalued and inputs to be overpriced in the future.

There is some indication that a number of countries which underpriced agricultural commodities in the past have moved or are moving towards more useful pricing policies. Hopefully, economic evidence of the past and better trained and

experienced policy administrators can be combined to provide pricing regimes which will spur agricultural improvement in the developing countries. Minimally, domestic prices need to be allowed to rise to world levels, with minimum levels guaranteed so that risk and uncertainty do not restrain farmers' decisions. While in the past they have had a record mainly of bringing gain to larger farmers, input subsidies can be used to provide an initial push in adoption of new technologies by both large and small farmers. Means mentioned previously can handle welfare problems of low income urban consumers.

INTERNATIONAL POLICIES AND TRADE

International programs with a similar effect are an extension of domestic policies which cause farm commodities to be underpriced. One program in this category is the limitation of exports until domestic consumption needs are met. The result is lower prices which serve as a disincentive for farm production. Programs which cause a country's currency to be overvalued can serve similarly in choking down on exports and domestic commodity prices. Lopez [18] estimated that export restrictions and overvalued exchange rates in Brazil lowered agricultural prices by 10 per cent, agricultural employment by 18 per cent, and use of capital by 27 per cent.

In previous times the United States participated in depressing prices in developing countries through its massive P.L. 480 food aid program whose dominant purpose was to improve domestic prices by moving surplus supplies out of U.S. markets. Hertford et al. [14] show that between 1953 and 1973, during a period of large imports and P.L. 480 grain from the United States, wheat acreage in Colombia fell sharply and investment in wheat research was cut in half. Parallel observations have been made for other countries and times [23, 25, 29]. While producers in developing countries have had respite from U.S. surplus disposal programs in recent years, the current complaint over commodity surpluses and the press for parity could again cause U.S. farm commodities to be overpriced, the accumulation of large stocks, and the implementation of an international food aid program to relieve domestic markets. Ongoing developments closely parallel those of the 1950's and 1960's which gave rise to mammoth U.S. exports under public assistance.

Just as developing countries have tended to undervalue agriculture through low commodity prices favoring consumers, other major developed countries have overvalued agricultural commodities by pushing prices far above world market levels. In addition to the United States prior to 1973, and perhaps starting again in 1977, Japan has done so with rice and the Common Market countries (especially France) with other grains. Levies applied in the latter countries have restrained imports and given high internal grain prices. van Stolk and Johnson estimate that as little as 20 per cent of world grain production moves in markets geared to world

prices [17, 28]. The remaining 80 per cent is marketed within boundaries of countries and world regions which prevent it from responding to international price signals. With international prices held too high in developed countries **and** too low in developing countries, surpluses are the result in the former and a slow transformation of agriculture is the result in the latter. Also, internal price stability is attained by creating great world **market** instability.

Indirectly, too, all policies which dampen trade of developed countries with developing countries restrain development of the latter. An important limitation in most developing countries is foreign exchange. Whether lack of foreign exchange directly limits capital goods imports for industrial or agricultural uses, the effect is generally the same in restraining development. Some improvements for agriculture depend directly on imported capital goods and technology (e.g., chemical plants, fertilizers, etc.). In other cases, if foreign exchange is not available for industrial goods, more of the domestic budget may be shifted from agriculture to the industrial sector.

CAPITAL AND MANPOWER RESTRAINTS

While perhaps not dominant, limited capital also is a restraint to the further development of world food supplies. Combined with decision making under uncertainty, it especially serves as a restraint in adoption of improved technology by small-scale cultivators. It need not do so in the long run, however, if credit policies are adapted to serve this strata of farmers as well as they do larger farmers in developing countries. If the sole criterion were one of food production, it may not have been unfortunate that the larger farmers of developing countries who produce mainly for the market have been the main beneficiaries of institutional credit systems, subsidized inputs, and publicly supplied technologies in the past [5]. Still, the vast majority of farmers in developing countries are small and their existence is important both in terms of their welfare equity goals and food production. (They dominate the populations of most poor countries.)

Capital is a major restraint in the clearing and leveling of land, in improving water distribution, and developing large new **irrigation** systems. In large areas which might be reclaimed for crops, sizable investment in roads and infrastructure would be necessary. Lack of these public investments restricts private investment in land reclamation in many cases. Lack of profitability or price instability may be a major **restraint** in reclaiming the remaining land area which could be converted to crops. A large amount of this land will be brought into cultivation when per capita incomes and food demand drive prices to sufficiently high levels for a sustained period of time. U.S. farmers had 12 per cent more land in crop production in 1977 than in 1972. Had soybeans remained at \$12 and corn and wheat at \$5 for a decade, farmers would have plowed up and cropped many more of the 150-265 million acres of potential Class I-II cropland. Hence, the constraint on

this conversion might be considered to be price level, with equal application to other countries. With grains at their 1973-75 real levels for 30 years, great quantities of soybeans would be flushed out of Brazil from land not now in crops. Similar developments would take place in cereal and palm oil production elsewhere over the world. Part of this would come from private investment. The large private holders of capital in developing countries reside in cities and are alert investors. Many own land cultivated by tenants or relatives and will invest further in **agriculture whenever** profitability becomes apparent. Governments evidently tend to initiate irrigation projects especially in periods when food prices are high [13]. Hence, while the FAO's estimate [3] that 122 million hectares could be cleared and improved for \$75 billion over 10 years may seem large, it will seem less so should grain and food prices rise to high levels over sustained periods of time. To the extent that these conversions are feasible, restraint to their implementation rests importantly on prices and profitability.

It is possible that capital availability has been less a restraint on agricultural productivity than the allocative patterns used for its investment. Only 10 per cent of international aid funds have gone into agriculture. A disproportionate amount has gone into industry and perhaps even some aspects of education. Even of capital allocated to agriculture, some claim that it has been misallocated, especially for land infrastructure development [1]. Supposedly, the personnel who plan major public projects have engineering biases which directs investment into capital intensive systems which prove to be inefficient in labor surplus countries and frequently "never get off the ground." Political and management considerations also may bend capital investment towards industrialization and urban purposes. The great majority of highly educated persons in developing countries are seldom associated with agriculture and are prone to discount the importance of the sector. While emphasis on agriculture fluctuates with crop shortfalls, and high food prices, few countries man a sustained national priority for agricultural development.

Although it is not readily quantified, management is posed as a more binding constraint than capital in limiting the rate and extent of agricultural development experienced in the past. The lack of sufficiently able and experienced management personnel causes inappropriate allocations of capital investments, and inefficient execution of projects once they are initiated. Examples commonly cited include large-scale public irrigation investments which lack efficient tertiary canals and distribution systems for water. This restraint need not, of course, prevail in the long run. Most developing countries have more trained personnel than in the 1940's. And further investments in human capital for these purposes can and should be made. However, the problem currently is crucial in some countries.

EQUITY CONSIDERATIONS

During most of the last 35 years, larger farmers in developing countries have been the major beneficiaries of government supplied credit, subsidized inputs, and

new technology. Developmental programs have been geared more to them than to small farmers. While small farms (under five hectares) occupy only 20 per cent of the land area, they represent 80 per cent of the land holdings in developing countries. In addition to large farm operators, the urban population also has been a major beneficiary in the sense that more food was available or that it was available at a lower real price. The smaller subsistence or semi-subsistent farmers who did not swing rapidly into advanced technology generally gained little through the market or in reduced real prices for grain.

If agricultural development had a single goal of producing only more food, with a zero weight on all other goals of development; it would be entirely appropriate to emphasize large farmers and neglect small farmers. Improvements can be made quicker and more readily with fewer extension and distribution personnel under this emphasis. However, urban people who are the focus of this emphasis are not the only poor and hungry groups in developing countries. Generally, the small farm population is the dominate proportion of the national population and has right to claims in equity.

Increasingly, development policies have come to recognize this need in multi-goal programs. The rate at which food production can increase may be less in the short run as sufficient weight is given to equity and the gearing of programs to its attainment.

While greater food production can be restrained partially by equity considerations in the short run, this need not be a major restraint over the long run. For example, a policy which allows grain prices to move to world levels while consumption by the poor is subsidized through a food stamp (coupon) plan (or "fair price" food stores for the poor) need not provide gain to the urban poor at the expense of farmers [25].

ENVIRONMENTAL RESTRAINTS

Reference has been made to the world's potential arable land. Much of it is not now cropped because of unfavorable environmental conditions, including limited moisture and soil deficiencies. Before the very large area projected by Clark [8] and Buringh *et al.* [6] could be fully converted to cropland, land would need to come from pasture, forests, and jungle uses. Some of these lands are surrounded by fragile circumstances. Bene *et al.* [19] indicate that a large amount of the humid tropical forest might be transformed into unproductive wetland in the next 25 years and the savannas increasingly into African desert. Overgrazing and misuse of semi-arid lands has caused the creation of deserts and erased populations in previous centuries.

Environmental conditions will restrain cultivation and intensive grazing of lands until conditions and technologies are found which can remove the negative environmental impacts. These conditions may require the international manage-

ment and allocation of water and grazing, particularly the diversion and control of water at the headwaters of rivers.

WATER MANAGEMENT

While the **FAO** estimates indicate another 23 million hectares of land could feasibly be irrigated by 1985, perhaps equally important in food potential is improved water management systems for land already under irrigation. Historic rights, customs, politics, and cultural conditions are barriers to allocations based on the marginal value productivity of water in all countries. Even in the United States, greater production could be forthcoming from given surface supplies if water allocation was broken from its pattern of historic rights and was allowed to move where its marginal productivity is greatest. Existing conditions surrounding water use cause investments in distribution systems to be minimized. Farmers at the head of the main canal receive too much and those at the end have too little water. Supplies are certain for some and undependable for others. Even international development agencies invest in systems with sufficient primary and secondary canals but with inefficient tertiary canals and **onfarm** distribution systems.

Ultimate Restraint

The restraints on world food production, I have been discussing, are not insurmountable. Prospects are that we can push forward sufficiently on the food supply front to take care of population and demand growth over the next 30-50 years. The world is not necessarily faced with calamity in the short run, but this is only true if the politicians and **administrators** of selected developing countries enact agricultural, development, and trade policies which hurry and guarantee adequate food supplies. Over the longer run, however, praises or blame for these same politicians and administrators will rest on their actions in initiating and implementing appropriate population policies. In the "pain and joy" of humans, I doubt that a dictator who lines healthy people against a wall is less kind and humanitarian than country **politicians** and administrators who allow high birth rates to prevail so that many millions are born into poverty and malnutrition and a life of suffering, tension, and frustration which is perhaps more **cruel** and miserable than death. The lack of adequate birth control technologies is not a sufficient excuse for nonattainment. Hungary and other countries have near zero population growth with present techniques. Needed immediately and on a much more intensive basis are larger and more effective communication programs to bring sufficient awareness of birth control alternatives to all of the population; larger public investments to provide the staffs, personnel, and administrative facilities to accomplish the task; effective economic incentives either in the cost of the techniques or in the return for their application; and actual sincerity and concern for future generations, to stir the present

generation of public officials into action. Of course, the ultimate goal is economic growth and per capita incomes at levels which cause families to exert their own initiative. Perhaps one threshold level is attained when the level of affluence of children cause them to draw on family income more heavily as consumers than they contribute to it as resources. But the world can hardly wait for this threshold level to be attained in all countries. The politicians and officials of these countries must speed effective public population policies. Whether the citizens of their countries live in misery at food subsistence levels in a half century will depend on the actions they take in the next two decades. Leaders of developed countries can provide encouragement through technical and financial assistances, but success or failure depends mainly on the leaders and citizenry of developing countries.

Note

1/We use the term demand possibilities since the quantities are not based on a projection of market equilibrium. In reality commodity price flexibilities would cause reduced consumption to be equated with supply at higher prices under some circumstances, etc.

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Discussion

Belai Abbai*

Professor Heady's interesting paper on the potential of and constraints to food production brings together all the salient elements that bear upon the food problem of developing countries. Even though these important issues have been extensively discussed in the literature, particularly since the World Food Crisis of 1972-74, Professor Heady's discussion gives a clearer perspective of these issues than has been done before. And the result is a clearer perception of the world food problem.

If I have rightly understood the thesis of his paper, it would be true to say that Professor Heady has lent the weight of his authority to what has now become the increasingly accepted view which is that the world's physical agricultural resources are adequate but serious economic policy restraints may prevent food production from increasing at a rate sufficient to feed the increasing population in the developing countries. In my view, Professor Heady correctly identifies the sources of growth which are principally: (a) increasing current yields, (b) intensifying production, (c) bringing new areas into cultivation, and (d) reducing post harvest losses.

Professor Heady believes that given the right policies, developing countries can increase average yields on existing farms from around 1.2 tons/ha to 3.0 tons/ha possibly within the next 30-40 years. But the transition will not be easy; it will depend on whether developing countries are willing and able to adopt hard policies including domestic price and trade policies that would elicit the required food supplies. In the main, I concur with what Professor Heady has to say on these issues. However, Professor Heady goes on to say that the introduction of production policies is necessary but not sufficient — action must be taken on the population front as well. Professor Heady acknowledges that a sure way of bringing down birth rates is in his own words "to increase the opportunity cost of women's time" which is essentially a function of economic development.

However, he seems skeptical that significant income growth can be achieved by many low income countries in the next 30-40 years. Accordingly, he concludes that if low income developing countries are to escape the Malthusian trap, they have to rely on the explicit introduction of family planning so as to bring down birth rates.

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While I am in substantial agreement with Professor Heady's paper, I would prefer to see more emphasis on the following issues:

Production Constraints. Low-cost technological packages have yet to be made available for many small farmers. The genetic potentials of several important food crops have to yet be [realized] including the millets, root crops, and pulses. Existing high yielding varieties of rice are limited to normal irrigation conditions. For instance, we do not yet have suitable packages for rainfed rice growing areas or semi-arid coarse grain areas, and where they do exist, high yielding varieties still present great risks to small farmers. For lower risks we need varieties which are drought and disease resistant even though yields may be lower. Also, delivery systems for rainfed areas are high-cost because farmers are scattered and adoption rates vary greatly among farmers. In all this access to land or security of tenure is essential for adoption of innovation. Similarly, low-cost technological packages need to be worked out for the tropical areas that are within the means of small farmers. Existing technological packages may bring additional lands into cultivation but the supply price at which these lands can be converted is beyond the means of the average small farmer. In many areas of the world, the ecological consequences of bringing land into cultivation do not appear to be fully understood. In other words, the constraints to food production are not technical but rather economic, institutional, and ecological.

The Role of Developed Countries. Professor Heady puts all responsibility for increasing food production on the developing countries. No reference is made to the role of the developed countries. While I agree that developing countries must make the hard domestic policy decisions, I am convinced that the developed countries also have an important role to play. The World Food Council in discussing year after year: (a) financial and food aid, and (b) access to the markets of developed countries, is evidence of the need for developed countries to play a role in the solution to the food problem. The paper stresses the importance of international comparative advantage, but fails to mention that OECD external tariffs prevent the developing countries from taking advantage of factor endowments. The pressure [of narrow economic interests in developed countries] against the use of multilateral assistance to finance the production of citrus fruits, palm oil, and sugar works against the comparative advantage of developing countries.

Trade, Self-sufficiency, and Aid. Professor Heady states that developing countries' agricultural prices are too low to provide adequate incentives to farmers. I could not agree more, but I do feel there is some danger in this generalization. The taxonomy work done by IFPRI and the work currently being done in the World Bank leads us to believe that it is useful to break the developing countries into broad groups or typologies. First, we have a minority group which includes the OPEC and the semi-industrialized countries with ample foreign exchange. They are probably better off importing grains since the world price is lower than the domestic price. Second, we have grain exporting countries like Thailand and Argen-

tina where the domestic prices are lower than international prices. Third, we have a group of countries with foreign exchange constraints but with good prospects for increasing domestic food production. Most low income Asian countries fall into this category. These countries should allow prices to rise and thereby pursue a policy of self-sufficiency. Professor Heady's conclusions would apply to this category. Finally we have a group of countries where not only the foreign exchange constraint is binding but also per capita production has been steadily declining. In this case, a policy of self-sufficiency or near self-sufficiency would drive prices so high as to increase the degree of malnutrition to unacceptably high levels. For the time being, these countries should be regarded as the target group for financial and food aid.

Budgetary Constraint. Professor Heady quite rightly states that the price increase necessary to elicit supply would have to be supplemented by direct food distribution such as a "food stamp" program. I would like to add one caveat to this which is that in countries where the supply response is not high enough because low-cost technological packages are not readily available for most farmers, the required price is bound to be high. And the budgetary burden required to mitigate the resulting malnutrition would be excessive. This is so because large sections of the population are already either on the edge or below the precipice of malnourishment. Given the known budgetary constraints of developing countries, there is a limit to which prices would be allowed to rise. This is apart from the well-known fact that a price rise would entail urban political pressure on the government.

Family Planning. If I have understood him correctly, Professor Heady's position is this: it would be a long time before per capita incomes could rise to levels sufficient to bring birth rates down. Therefore, politicians and administrators must introduce explicit family planning programs without waiting for per capita incomes to rise significantly. If birth rates do not decline within the next 30-40 years, Professor Heady would be prepared to make the value judgement — which I personally find to be rather unfortunate — that politicians and administrators ought to be held morally responsible for the misery and suffering of millions yet to be born. The problem I have with this judgement is that it seems to be based on an unrealistic view of the scope of political action [in shaping the destiny of nations.] It would seem to me that Professor Heady ascribes to politicians and administrators more power than they actually possess to manipulate social phenomena. For one thing, as Myrdal, Huntington, and others have pointed out, the majority of Third World countries are in fact "soft" states. Governments are weak where states do not have a strong central political party or parties for mobilizing public opinion. This condition is satisfied in only a few developing countries. The **Pretorian State** typical of Latin America and lately of Africa is a classic example of the naked confrontation of social forces in society. Where conflicts do not get resolved, a government is weak to act. I therefore do not believe birth control measures alone

could bring down birth rates on a massive scale; an increase in per capita income is also necessary. I believe that both economic development and explicit family planning have to be promoted side by side if birth rates are to decline on a significant scale.

Third World Development And the Demand For Agricultural Exports — The Role of the United States

John W. Mellor*

Accelerated economic growth in Third World countries holds potential for immense growth in their agricultural imports. Perhaps surprisingly, policies which stimulate development of the domestic agricultural sectors of these countries are likely to provide the most rapid growth in their agricultural imports. This results from the close interrelation of employment growth; demand for food, and the supply of agricultural commodities. How quickly and to what extent their import potential develops will be substantially influenced by international policies with respect to trade, general development assistance, food aid, and food security.

The United States has a major effect on the environment within which Third World countries select development strategy. This country accounts for **43** per cent of the gross national product (GNP) of the OECD nations (roughly North America, Western Europe, Japan, and Oceania); 13 per cent of world trade; and **32** per cent of OECD nations foreign assistance (even though the proportion of GNP devoted to foreign assistance is among the smallest). As the largest exporter of agricultural commodities, the United States has a particular interest in Third World decisions which affect agricultural trade. In 1974 the value of U.S. agricultural exports was **\$22** billion, 19 per cent of the world total. This exceeded the total for the next three largest exporters, France, the Netherlands, and Australia, and was four and a half times that of Brazil, the fifth largest exporter.

The Dynamics of Demand for Agricultural Commodities

The demand and supply of agricultural commodities have grown roughly apace in the early stages of economic development that have characterized the bulk of Third World countries since World War II. However, substantial weather-induced,

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year-to-year fluctuations in production have caused large variations in the privation of the poor, in prices, and in imports.

Over the next few decades, the bulk of humanity is likely to move into the middle stage of economic development in which rapidly accelerating growth in demand for agricultural commodities is likely to outpace supply, with consequent upward pressure on prices and burgeoning import demand.

This contrasts with the mature, late stages of economic development characteristic of North America and Europe in which growth in supply of agricultural commodities significantly outpaces growth in demand, resulting in downward pressure on prices, building of surpluses, and attempts to restrain production.

In very low income countries, half or more of the population receive inadequate calories, as well as lacking sufficient protein and other nutrients to support a healthy, active life. The International Food Policy Research Institute recently estimated that in the developing market economy countries the deficit between actual consumption and that required to meet gross dietary energy requirements is equivalent to 64 million tons of grain.¹ (See Table 1.)

During the early stage of development, the population growth is apt to be modest while per capita income is growing little or not at all. Per capita income is particularly likely to be stagnant among the lower income people who have the largest potential demand for food. Even more important, the demand for food is affected by the supply. Since the bulk of the population depends on agriculture for its income, slow growth in agricultural production impedes growth in per capita income, the principal determinant of effective demand for food. In addition, when per capita income is growing slowly or declining, death rates will be higher than otherwise, thereby restraining population growth. On the other hand, rapid growth of population in low income countries is not likely to be accompanied by an increase in demand for food. Although the increase in the supply of rural labor will be reflected in more intensive agriculture, growth in output probably will lag behind the increase in population.² Thus, a contemporary low income country is likely to have characteristics of demand for agricultural products as shown in the top row of Table 2. Even the slow growth in productivity of traditional agriculture is likely to keep pace with growth in demand. Further, if agriculture and gross national product in a largely rural country are growing slowly, little foreign exchange is likely to be available to finance food imports; and the governments will be reluctant to allocate scarce resources for such imports.

As a nation commences economic growth, demand for agricultural commodities tends to accelerate. Per capita incomes begin to grow more rapidly. The income elasticity of demand may decline somewhat, but will remain high. Population growth accelerates with rising incomes and improved organization of health and other services. But the interaction between supply and demand for agricultural commodities will continue to be close as long as a high proportion of population and gross national product are generated in agriculture. Poor performance will be

Table 1

**STAPLE CROP REQUIREMENTS TO MEET THE DIETARY ENERGY GAP IN
DEVELOPING MARKET ECONOMIES, BY IFPRI CATEGORY AND REGION, 1975**

(Million Metric Tons, Cereal Equivalent)

IFPRI Category	Amount Required to Meet 110 Per Cent Dietary Energy Requirement*	Gross Dietary Energy Gap†
Food Deficit	439.4	61.4
Low income	291.2	52.2
Middle income	110.8	6.0
High income	37.4	3.2
Grain Exporters	36.9	2.5
Total DME‡	476.3	63.9
Region		
Asia	247.4	38.2
North Africa/Middle East	66.9	8.2
Sub-Sahara Africa	71.4	13.1
Latin America	90.6	4.4
Total DME‡	476.3	63.9

SOURCE: Food Needs of Developing Countries: Projections of Production and Consumption to 1990, p 63

*Dietary energy standards are based on 110 per cent of the dietary energy requirement for each country in order to allow for inequality of income distribution.

†Total for all countries with dietary energy targets above respective consumption levels; dietary energy gap for 1975 was calculated from consumption trend estimates.

‡Developing market economies

matched by slow growth in per capita income, squeezing per capita demand and possibly even population growth. (Row 2 of Table 2 depicts such a situation.)

During the low income phases of growth, weather-induced fluctuation in production may induce widespread privation which domestic and foreign governments may attempt to mitigate through imports. Because of balance of payments constraints, relief will also be needed in the form of concessional credits and grants for food imports. Supplies available for such relief are much smaller than in the early 1960's.

As a country moves to middle income status, three major changes occur that may cause demand for agricultural commodities to substantially outrun supply. First, the rate of per capita income growth accelerates sharply. Even though the income elasticity of demand will decline, it will remain high. Second, population

Table 2**COMPARISON OF GROWTH OF DEMAND FOR AGRICULTURAL COMMODITIES,
AT DIFFERENT STAGES OF DEVELOPMENT, HYPOTHETICAL CASES**

Level of Development	Per Cent of Population in Agriculture	Rate of Population Growth	Rate of Capita Income Growth	Income Elasticity of Demand	Total Growth in Demand
Very low income	70	2.0	.5	1.0	2.5
Low income	60	3.0	1.0	.9	3.9
Medium income	50	3.0	3.0	.6	4.8
High income	35	1.5	5.0	.5	4.0
Very high income	20	1.0	3.0	1	1.3

SOURCE: John W. Mellor, *The Economics of Agricultural Development* (Ithaca, N. Y.: Cornell University, 1966), p. 78.

growth rates tend to rise, or at least remain at a high level, due to reduced death rates from improved public health measures, higher per capita income, and a lag in the decline in birth rates. Third, and most important, demand for agricultural commodities becomes increasingly determined by events in the nonagricultural sector and hence is independent of agricultural production. As depicted in row 3 of Table 2, demand may grow about 5 per cent in this phase. This is likely to exceed growth in agricultural production which has rarely sustained such a growth rate over large areas and substantial periods of time.

Accompanying these developments, the accelerated growth of manufacturing provides potential for foreign exchange earnings to finance agricultural imports. From this stage on, demand for and supply of agricultural commodities become less and less determined by each other. As per capita income growth continues to accelerate, even with continued decline in income elasticity of demand, income becomes a more dominant determinant of demand. Population growth rates begin to decline sharply. Overall, demand for agricultural commodities continues to grow rapidly, though its rate of increase begins to turn down.

The gradual separation of the forces which determine the demand and the supply for agricultural commodities is of such great importance to long run trade relations that it deserves discussion at greater length. The contrast between high and low income countries in the interrelation of supply and demand is illustrated in Table 3.

The top part of the table shows the interaction of supply and demand for a typical low income country. Assumptions concerning the rate of growth of population, the income elasticity of demand for agricultural commodities, the proportions of the population in the agricultural sector, and the rate of growth of per capita income in the nonagricultural sector are held constant throughout. The table in-

Table 3

THE EFFECT OF DIFFERENT RATES OF INCREASE IN AGRICULTURAL PRODUCTION UPON THE DEMAND FOR AGRICULTURAL COMMODITIES AND AGRICULTURAL PRICES, WITH VARIOUS HYPOTHETICAL ASSUMPTIONS

Rate of Growth of:									
Food Production	Population	Per Capita Agricultural Income	Per Capita Non-agricultural Income	Proportion of Population in Agriculture	Rate of Growth of Over-all Average Income P a Capita	Income Elasticity of Demand for Agricultural Products	Rate of Growth in Demand for Agricultural Products	Price Elasticity of Demand for Agricultural Products	Rate of Growth of Agricultural Prices
Q	P	$gn=Q-P$	gn	d	$\frac{g+gn(d) + gn(100-d)}{100}$	n	$D=P+ng$	e	$Pr = \frac{Q-D}{e}$
Case I — Low-Income Country									
0.0	3.0	-3.0	4.0	70	-0.90	0.8	2.3	-0.9	2.6
1.5	3.0	-1.5	4.0	70	+0.15	0.8	3.1	-0.9	1.8
2.0	3.0	-1.0	4.0	70	+0.50	0.8	3.4	-0.9	1.6
3.0	3.0	0.0	4.0	70	+1.20	0.8	4.0	-0.9	1.1
4.0	3.0	1.0	4.0	70	+1.90	0.8	4.5	-0.9	0.6
6.0	3.0	3.0	4.0	70	+3.30	0.8	5.6	-0.9	4.4
Case II — Relatively High-Income Country									
2.0	3.0	-1.0	6.0	33	3.7	0.5	4.9	-0.6	4.8
3.0	3.0	0.0	6.0	33	4.0	0.5	5.0	-0.6	3.3
4.0	3.0	1.0	6.0	33	4.4	0.5	5.2	-0.6	2.0
6.0	3.0	3.0	6.0	33	5.0	0.5	5.5	-0.6	-0.9

NOTE. The interaction factor would be rounded out in nearly all the above calculations and, in keeping with normal practice, is therefore ignored

indicates the effect on the rate of growth in the demand for agricultural commodities of various rates of increase in agricultural production. A further assumption concerning the price elasticity of demand for agricultural commodities is made to show the effect of various rates of growth of supply and demand on agricultural prices. This is a fair proxy for the pressures to import. It is implicitly assumed that in the agricultural sector per capita income is directly proportional to production. This is a reasonable approximation in most low income countries where production costs other than family labor are very low. A further simplifying assumption is made that income elasticities are the same in urban and rural areas. A more precise assumption on that point would further narrow the spread between rates of growth in demand and supply.

Under the unlikely assumption that agricultural production does not increase at all while nonagricultural incomes and total population increase as stipulated, we could expect agricultural prices to rise by about 2.6 per cent per year. If we make the more logical assumption that the marginal productivity of the rural labor force is three quarters of the average product, we could then logically further assume

that a 2 per cent rate of population growth would be reflected in a 1.5 per cent rate of growth in agricultural production. In that case, with the given assumptions, agricultural prices would be expected to increase by only 1.8 per cent per year. This would be a noticeable increase, but is probably containable in most political systems and hence would not be a strong inducement to import.

With the given assumptions, a constant relationship of prices would require a rate of growth of agricultural production of about 5 per cent per year. A rate of increase of 6 per cent per year would result in only a 0.4 per cent per year rate of decline in agricultural prices.

There is a further interaction of variables which is not accounted for in the above discussion. With a given level of production, a rise in agricultural prices would raise agricultural incomes and thereby raise demand somewhat, thus, causing a somewhat greater increase in prices than that shown in these calculations. This influence would be small, however, since only about 30 per cent of agricultural production is marketed and higher prices would cause some substitution of other goods in both the rural and urban sectors.

These points are emphasized by the high income case in Table 3. The 3 per cent population growth assumption is carried over from the top of the table. The rate of growth demand is greater at all levels of agricultural output growth except at 6 per cent. This is due to the greater rate of growth of nonagricultural income. But most important, an increase in growth of agricultural production from 2 to 6 per cent is accompanied by an increase in demand of only 0.6 per cent from 4.9 to 5.5 per cent. In the very low income case, such an increase in output was accompanied by an increase of demand from 3.4 to 5.6 per cent. The difference is due to the smaller proportion of the population in agriculture and the lower income elasticity of demand in the high income case. The effect on prices, however, is greater in the more developed country. Thus, while in the low income case, an increase in production growth from 2 per cent to 6 per cent was accompanied by price increases of 1.6 per cent to 0.4 per cent, in the relatively high income country, the price increase ranged from 4.8 per cent to -0.9 per cent.

The table indicates that as a country progresses toward high income status the demand related pressures to import become substantial. When England entered the dynamic stages of its industrial revolution, it became highly dependent on imported food. The debates about the Corn Laws in the early 19th century marked that transition. Japan became a major importer of food at a similar stage. Taiwan is the notable present day example of a country passing through the period of rapid growth in demand for food. A net exporter of grain in the early 1950's, Taiwan was importing nearly one-half of all the grain consumed by 1975.³ Although Taiwan is a notable success story in agricultural modernization, demand grew even more rapidly than supply because of rapid income growth.⁴ Increased exports, particularly of manufactured goods, facilitated commercial purchase of rapidly growing quantities of agricultural commodities. The ready availability of

agricultural commodities on world markets at stable prices favored continued growth in demand.

South Korea has often been considered a failure in agricultural development because of the rapid growth in imports. In fact, however, South Korea achieved a quite respectable **2.9** per cent rate of growth of agricultural production over **1965-73**.⁵ The rapid growth in demand and the ability to buy in world commercial markets gave the appearance of production failure.

Countries with a high proportion of the world's population are on the threshold of the middle income stage of economic development. During this lengthy, but nevertheless finite period, demand is likely to grow more rapidly than supply. Eventually, with continued economic growth and rising incomes, population increases will slow and income elasticities will drop to a low level. This will result in a gradual slowing in the growth in demand for agricultural commodities. By that time, demand and supply factors will be largely disassociated. However, under the stimulus of past rapid growth in demand, agricultural production growth will have become institutionalized at relatively high rates and surpluses will accumulate.

Alternative Development Strategies

The preceding discussion dealt with central tendencies in the relationships between economic development and the supply and demand for agricultural commodities. There is, of course, immense potential for variation in these relationships. This depends primarily on the extent to which those in the lower income groups share in the increased income resulting from economic growth.

Upper income people spend relatively little of their additions to income on agricultural commodities. Thus, if only the upper income classes receive increased income, growth in demand for agricultural commodities will be relatively small. Of the income groups in India, for example, the lowest **20** per cent spends **60** per cent of increments to income on grain and some **85** per cent on agricultural commodities generally.⁶ In contrast, the top **10** per cent spends less than **5** per cent of increments to income on grain and about **35** per cent on all agricultural commodities. As long as growth in income is restricted to relatively higher income families, it will have relatively little impact on growth in the demand for agricultural commodities. Conversely, rapid growth in income of low income people results in explosive growth in demand for food.

In developing countries, the distribution of additional income is strongly influenced by development strategy. To simplify, we may distinguish two quite separate strategies of economic growth — high employment and capital intensive. The high employment strategy is characterized by rapid development of the rural sector, rapid growth of the agricultural sector, and rapid growth in foreign trade. The capital intensive approach has opposite characteristics.

With the exception of a few city states such as Singapore and Hong Kong, a low income country has 60 to 80 per cent of its population in rural areas. If development is to include the bulk of the population, it must be based upon modernizing the agricultural sector, thereby raising its productivity and increasing the rate of growth of agricultural production and rural incomes. Both small and large farmers must participate.

Because many in rural areas are landless or nearly so, accelerated growth in agricultural production alone will not allow broad participation of low income people in the development process. Population growth and the rise in agricultural productivity will reinforce the need for rapid growth in nonagricultural employment. Development of agriculture will require a substantial portion of the limited stock of capital and the remaining capital for the nonagricultural sector must be spread very thinly. Thus, **growth** must take **place** in labor-intensive industries with high potential for generating employment.

Maintaining a relatively low degree of capital intensity will be easier if there is a potential for foreign trade. In this case excess production of low capital intensive commodities may be traded for needed high capital intensive goods. Thus, the potential for foreign trade may play a crucial **role** in the choice of a low capital intensive, high employment strategy of **growth**.⁷

The low employment strategy of growth gives relatively little emphasis to the agricultural sector. It emphasizes the growth of capital intensive, large scale, heavy industries, and a high degree of self-sufficiency. Although there may be substantial imports of capital goods in the early stages of development, this strategy seeks to develop the capacity to produce domestically the goods and services needed for further growth. Since growth in employment is relatively slow, there is relatively little pressure on agricultural supplies and therefore little economic incentive to emphasize that sector. Foreign trade also is relatively unimportant under this strategy.

The low employment strategy is likely to be most appropriate to a country which has poor prospects for foreign trade, particularly in exports of labor intensive commodities, and for developing its domestic agriculture. The implications for the agricultural sector are clear. It will grow slowly, as will the demand for agricultural commodities because of the slow growth in employment. There also will be very little capacity to generate exports in order to pay for imports of agricultural commodities.

There will come a time, of course, when the capital stock will have grown enough that it will be possible to raise consumer incomes, particularly of poorer people. This will create a rapid growth in demand for agricultural commodities. Whether that demand can be sustained will depend primarily on the potentials for developing agriculture and increasing exports to pay for imports of agricultural commodities.

Thus, we may say that the difference between the two strategies is really one

of timing. In the high employment strategy, the increase in demand for agricultural commodities comes considerably sooner than in the low employment strategy. Thus, Japan, Taiwan, and South Korea became major importers of agricultural commodities much sooner than the Soviet Union in terms of their relative per capita incomes and their stages in economic growth. The Soviet Union, of course, is the epitome of the low employment, capital intensive strategy of growth. Even though its agricultural production has lagged considerably, the Soviet Union became a major importer of agricultural commodities only very recently. In contrast, Taiwan, Japan, and South Korea became major importers at much lower levels of per capita income, despite much greater success in their agriculture.

Potential Influence of the United States on Choice of Development Strategy

The choice of development strategy depends, of course, on the perceptions of national leadership as to the costs and benefits of alternative strategies to national development and the political stability which maintains their power. These perceptions are also substantially influenced by the international environment.

Since growth in the agricultural sector is crucial to the high employment strategy, the influence of external powers on those perceptions is important. If the prospects for accelerated growth in agriculture appear very poor, a country may be reluctant to choose a strategy which depends so much on success in increasing agricultural production. In judging the potentials in agriculture, emphasis will be placed on the long run potentials and the ease and rapidity with which external assistance will be available to help realize them, or the risks and uncertainties which may result from short term fluctuations in weather.

The decision as to which strategy to adopt also will be affected by the nature of the country's political system. The more the government relies upon support from a small, high income elite, the less willing it will be to emphasize development of the agricultural sector. Narrowly based political systems are more prone to choose a capital intensive development route. Support for such systems does not come principally from the mass of the people who would benefit most from increased employment and rising incomes. Instead, it comes from those who benefit substantially in income and consumption from growth in large scale industry, and from government officials whose power will be increased by the planning processes associated with such an approach.

The characteristics of the two alternative strategies of development, and the conditions for each, indicate clearly the role which the United States and the other rich, industrial countries may play in influencing the choice of strategy.

One effective form of assistance is protection against the risks from unfavorable weather which may dissuade political leaders of developing countries from

opting for a rural employment oriented strategy of growth. Success in the agricultural sector involves accelerating growth rates from around 2½ to 3 per cent, to 3½ to 4 per cent, however, weather fluctuations may reduce agricultural production as much as 10 to 20 per cent in one year. Thus, several years of accelerated growth could easily be wiped out by one bad weather year. For a conservative politician, that is a powerful argument against emphasizing agriculture as the key to development strategy. Such risks can be greatly reduced by a well-organized food security system. IFPRI has estimated the costs for such a system which essentially operates on an insurance basis and could perhaps most effectively be carried out by the International Monetary Fund. A variant would use large quantities of grain from P.L. 480 Food for Peace programs to back up the insurance system. Such insistence would reduce the cost and thus increase the incentives for low income countries to emphasize the agricultural sector.

Food aid also could play an important role in helping maintain supplies in the period between the development and initiation of programs for increasing agricultural production and the actual increase in output. Food aid can be brought immediately to the scene in order to back up a high employment program while the efforts to develop indigenous agriculture are being pursued vigorously. Thus, food aid may perform a dual role by insuring against both the effects of poor weather and the difficult-to-predict lags associated with the development process.

More general economic assistance programs may facilitate a high employment, agriculture oriented strategy in two ways. First, foreign assistance funds earmarked specifically for the agricultural sector may load the incentives in that direction. Perhaps more important, foreign assistance may facilitate expenditure patterns which satisfy old political support systems while the new support systems are being built. This may permit the building of a broader political base with a much larger and relatively lower income constituency.

Finally, trade policies of the major industrial nations play an important role in choice of development strategy. Although food aid and general economic assistance may be very important in the short run in determining the choice of strategy, in the long run, trade relationships may well be much more important. Trade plays a critical role in two respects. First, it facilitates the high employment strategy directly by offering enlarged markets for relatively labor intensive goods. Second, it provides the foreign exchange for purchasing agricultural commodities as a backup to domestic production. '

Timing, Potentials, and Extent of Growth in Agricultural Exports to Developing Countries

The extent to which aggregate demand for agricultural exports from low income developing countries increases will depend particularly on events in Third World countries with very large populations, in particular, China, India, Indo-

nesia, and Nigeria. These four countries alone have nearly half the world's population.

When we project past agricultural production growth rates, expected future population growth rates, and per capita income growth rates of the recent past, we see large gaps opening between supply and demand of agricultural commodities in those countries. IFPKI projections indicate that by 1990 India will have a 4.3 million ton deficit in production of major staples if there is no change in per capita income, a 17.6 million ton deficit with low income growth, and a 21.9 million ton deficit with high income growth. For Indonesia the deficits are, respectively, none, 6.0 million tons, and 7.7 million tons; for Nigeria they are 9.3 million tons, 17.1 million tons, and 20.5 million tons.⁸ Similar deficits are shown for many Third World countries. They may respond to this situation by not accelerating their agricultural production growth rates and containing their domestic demand more fully. They could do so, as indicated above, by following relatively capital intensive processes of economic growth. If, however, they attempt to accelerate their agricultural production growth rates in order to meet that increase in demand, they are very likely to further accelerate their growth in per capita income and thereby push demand up more rapidly than in the past.

At present, Indonesia and Nigeria are experiencing rapid growth in imports of food as increased income from oil revenues has allowed significant expansion in domestic employment and consumption of agricultural commodities. It is not yet clear whether these countries will use their oil revenues to accelerate rural development and provide a base for continued rapid growth in per capita incomes and demand for food, or whether they will emphasize capital intensive types of development that will slow growth in demand for food.

The People's Republic of China has chosen a generally capital intensive strategy of development that has provided relatively little increase in incomes of the mass of people since recovery from the privations of civil war in the early and middle 1950's. Prior to the war, per capita food consumption of the mass of rural people had been raised substantially, primarily through a radical redistribution of assets, income, and food supplies. Average consumption did not rise much. In the future, industrial development might become relatively more labor intensive and wage rates may be allowed to rise. This would result in rapidly rising incomes for the mass of people and hence rapidly rising demand for food. That may result in increased imports. That, however, would require an improvement in exports which would depend on change in policies in both China and in the nations to which exports might go.

In India, the initial development strategy from the late 1950's into the 1960's was based on the assumption that increasing trade would be very difficult for India. India's chief trade partner at that time was the United Kingdom, which had a low growth potential. In addition a high proportion of India's exports were

agricultural commodities such as tea and jute for which the demand was assumed to be highly inelastic. It was also assumed that very little of the scarce development resources would go to agriculture. Thus, it was expected that growth in agriculture would be at best modest.

In the late 1960's and the early 1970's there was some indication of a change in strategy towards greater emphasis on the agricultural sector and on increasing employment. The present government of India seems to have strong predilections in that direction. The critical questions are whether government would be able to obtain sufficient food during the period agriculture is being developed and protect against the possibility of two or three bad crop years in a row.

Using India as an example, one may argue that with the old capital intensive strategy of growth, imports would be likely to run in the 4 to 6 million ton range. This would be sufficient to take care of a significant portion of urban food needs with imported foods under government control. An alternative high employment strategy might give another percentage point per year in the rate of growth in agricultural production. It might also provide the confidence in the domestic production and in the trade regime which might make imports of 10 or more million tons of grain acceptable. That might then encourage further acceleration in employment growth and hence in demand for agricultural commodities.

If a substantial number of large population Third World countries were to undertake a labor intensive rural oriented strategy of growth, pressure on world food supplies would be immense. Of course, some Third World countries, for example, Brazil and Thailand, might improve agricultural production enough to greatly increase their agricultural exports. The United States could presumably expand its rate of growth of agricultural production significantly. It is conceivable, however, that the pressure on the food supplies would be considerably greater than the capacity to meet those pressures. One may then raise the question as to what extent the terms of trade might then turn sharply in favor of the agricultural sector. One cannot give an unequivocal answer to that question. However, one may speculate that a significant portion of the rapid increase in demand would be traceable, as in the case of Japan, Taiwan, and South Korea, to accelerated growth in the demand for livestock products with the consequent growth in derived demand for grain. The demand for livestock products is relatively elastic. Thus, it may well be that a choice of a development strategy that emphasizes agriculture and employment in the Third World would provide rapidly rising demand for agricultural commodities as long as that demand could be met at relatively constant real prices — but; an equilibrating mechanism would come into effect as rapidly rising prices reduced growth in livestock consumption.

Conclusion

Major agricultural exporters have an incentive to foster growth strategies in developing countries which emphasize rapid employment growth. Such strategies

must give major emphasis to accelerated growth in agricultural output. However, if employment growth is rapid, demand is likely to grow even faster than supply, opening a gap to be filled by imports which are small as a per cent of production but very large in absolute terms.

Rich nations may foster such a development strategy by assisting growth in agricultural productivity, providing food aid to encourage accelerated growth in employment, providing food security, and fostering trade.

If demand growth for agricultural commodities substantially exceeds supply growth, prices of grain will rise and check growth of demand in the low income countries in which it is elastic. That may to some extent shift consumption away from agricultural commodities. It will not take large price increases to cause this shift because of the highly elastic demand, especially for livestock products. Alternately, developing countries will turn to a less employment oriented strategy.

World agricultural development goals are compatible with the interests of the United States in increasing its agricultural exports. The United States can foster such development with programs of food security, food aid, capital assistance, and trade. Agricultural development will permit some developing countries to increase their exports. However, an attempt by the United States to prevent growth in output of particular commodities, or to prevent all exports, would be likely to prejudice development and demand stimulation goals as well as humanitarian objectives.

Notes

1/ *Food Needs of Developing Countries. Projections of Production and Consumption to 1990*. Research Report 3 (Washington, D.C.: International Food Policy Research Institute, December 1977), p. 63 (The developing market economy countries include the bulk of Third World developing countries, with the exclusion of the centrally planned countries, principally The People's Republic of China, Cuba, and Vietnam.)

2/ For a fuller discussion of these complex relations between labor supply and agricultural output see Uma Lele and John W. Mellor, *Estimates of Change in Foodgrains Production in India, 1960-61*, Cornell International Agricultural Development Bulletin No. 2 (Ithaca, N.Y.: Cornell University, August 1964)

3/ Unpublished USDA Report. January 30, 1978.

4/ See T. H. Lee, *Intersectoral Capital Flows in the Economic Development of Taiwan, 1895-1960* (Ithaca, N.Y.: Cornell University Press, 1971).

5/ World Bank. *World Tables*, 1976.

6/ John W. Mellor and Uma J. Lele, "Growth Linkages of the New Foodgrain Technologies," *Indian Journal of Agricultural Economics* 28 (January-March 1973), pp. 33-35

7/ For a detailed exposition of the rural based, high employment strategy of growth, see John W. Mellor, *The New Economies of Growth* (Ithaca, N.Y.: Cornell University Press, 1976)

8/ *Food Needs of Developing Countries*, Table 10, pp. 70-71, and Table 14, pp. 90-91

Discussion

Arthur Mead*

It should come as no surprise that I find John Mellor's paper a well developed, sophisticated presentation on the processes of development in the Third World. This is John Mellor's business and experience which I have been able to follow on occasion; and I am pleased to say that his business and that of the Food and Agriculture Organization have similar orientation.

We are concerned, as he is, with the food problem of developing countries; the disturbing longer term trends of agricultural production in these countries and their implications; and the shorter term problems of hunger and malnutrition which are prevalent in the world today but which are masked by generally good crop conditions on a global basis. John Mellor's research has these areas of concern in mind as we do.

I do not intend to take major issue with the broad concepts laid out in the paper. It describes for policy makers the relationship of the demand and supply of agricultural commodities as they operate in developing countries with different income levels and poses alternative development strategies. But I will take the opportunity to comment on the main elements described and to offer other specific elements for consideration and discussion. In the process, it also will permit me to register some of the concerns of our Organization.

Obviously, the United States as the major exporter of agricultural commodities has a key role in the food problems of developing countries. At the outset, the paper obliquely, possibly apologetically, refers to the small proportion of the GNP devoted to foreign assistance by the United States. Let's be more specific; the United States in 1977 devoted .24% of its GNP to Official Development Assistance, 12th in the list of 18 major industrial nations. We are hopeful that this rating will improve, and it may very well do so, as we note recent U.S. announcements on such assistance in the years ahead, including its dominant role in food aid. Obviously, too, the United States has a major role in the manner it relates its assistance to Third World Development.

There is an interesting relationship between the growth of developing countries and their commercial imports of U.S. agricultural commodities. I am generally familiar with the U.S. Department of Agriculture work on this relationship in which it reveals that as developing countries progress economically their purchases of ag-

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ricultural commodities from the United States on a commercial basis increase. Their analysts have plotted this relationship; Mellor's presentation on supply and demand very nicely indicates the basic reasons for this occurrence.

Thus, assistance to the developing countries is not only "right" in my view, it also redounds to the benefit of the U.S. farm sector. I would also add that while some of us in international organizations focus primarily on the needs and aspirations of the Third World, we support measures to maintain a healthy U.S. farm sector, for such a condition is important if not essential to the fulfillment of these needs and aspirations.

So we are agreed. At least I say we are agreed. As a general proposition what is good for the developing countries is good for U.S. agriculture.

I would like to suggest and highlight a basic concept or strategy for developing countries that is overriding in my view. It is imperative that it be an integral part of the process in countries largely rural in character and where the producer is small and isolated. We must help him, the producer, grow more food — first things first.

Why? At the time of the World Food Conference in 1974, FAO estimated the under- and mal-nourished at about 400 million people. Because of the relatively good harvests experienced globally since that time, there is far less publicity on the hunger problem. Nonetheless, increases in population since 1974, unaccompanied by substantial expansion of productive employment, suggest that the number of under- or mal-nourished probably is larger today, possibly as high as 700 million.

Of special importance, it seems to me, is who benefits from increased production. More than half of the poorest people in the world are small farmers. Their families will eat better only to the extent they are assisted in producing more food for themselves and, hopefully, a bit for the market. Therefore, I would argue that a strategy with that objective would be important for the major countries cited in the Mellor paper, for example, India. I was pleased to hear Dr. Heady stress this point earlier this morning.

It seems to me also that a country like India should, as I believe it does, give substantial emphasis to the export of light manufactured products. Mellor's paper touches on this point and it merits some emphasis.

There is a place in many developing countries to export labor intensive agricultural and manufactured products since they are endowed with a supply of labor. Even within present trade relationships, which are not particularly favorable to the developing countries, there has been a steady increase in such exports which can pay for needed food and other imports. As I indicated, India is an **example** of the use of such export promotion as a strategy which should not be overlooked. This morning Mellor mentioned that India's currency reserves had reached \$5 billion. This kind of export promotion could be enhanced if special treatment for the needs of the developing countries is afforded in the current multilateral trade negotiations. We should be hearing about these prospects during another part of the symposium.

It may be risky on my part in light of Mellor's involvement in India's problems over the years, but let's continue to discuss that country's agricultural situation. It is the country so often referred to in world hunger discussions. At the moment because of good weather there, it is not an important cereal market for the United States. In fact, amidst its acknowledged undernourished, it has accumulated government cereals stocks at an unprecedented level. I'm not sure what that level is today but it should be about 20 million tons, give or take 5 per cent. Moreover, it is supplying wheat to Vietnam and Afghanistan although in relatively modest quantities. Complete information is not known in Washington, but the transactions appear to be loans in kind, interest free, with a rapid repayment schedule in wheat after a short period, which you could call a grace period. This would appear to be a paradox — an apparent concessional exporter with large numbers of its population suffering from malnutrition. I hope there is time for Mellor to explain what appears to be a monumental inconsistency, because I have heard him give a rational explanation of the situation.

Yes, we are describing a country often referred to as the "bottomless pit" for food aid. As a practical matter, it cannot be a bottomless pit in terms of cereal imports because of logistical limitations. When the paper discusses Indian deficits in 1990 under certain growth assumptions, these deficits cannot be considered as potential exports. The figures posed are 17.6 million tons under low income growth and 21.9 million tons with high income growth. India's massive cereal imports during the two successive drought years in the mid-1960's were in the general magnitude of 12-13 million tons a year and they reached that level because extraordinary measures were taken, particularly by the United States, to help coordinate, expedite, and streamline port and distribution operations there. During the early 1970's when India resumed substantial imports of cereals that capacity was estimated at less than 10 million tons.

The last part of the title of the Mellor paper is "The Role of the United States." In this respect, since I find the paper somewhat brief on the role of the United States in relation to the discussion of concepts and strategy, I will put some specifics on the table. One crucial area that his organization and mine are involved in is that of food security. A discussion of food security seems appropriate in relation to strategy options because the attainment of global food security would allow for more adequate planning by "chronic" food deficit countries.

There should be no need to trace the long and frustrating history of attempts to establish World Food Banks, World Food Boards, Insurance Schemes, and related endeavors to achieve world food security. With good timing, and, in my view, with great skill, the FAO in 1973 proposed the International Undertaking on World Food Security, which envisaged an undertaking based on national policies and national control of production and stocks with some degree of international coordination. The Undertaking was subscribed to in principle by most of the World Community, but again we have witnessed little in concrete results. We are hopeful that

the continuing negotiations to replace the International Wheat Agreement will be more fruitful; and it is my understanding that we can be a little more optimistic now in light of progress made in the May 1-5 Interim Committee session in Geneva. I know this is a mission high on the U.S. agenda, a role we can applaud and a mission that can be beneficial to grain exporters and the developing world, particularly if special regard to the needs of the developing countries is considered. Our main interest is in the reserves aspect of the negotiations to serve as an underpinning to world food security.

World Food Security briefly described means a stable supply of basic food-stuffs, primarily cereals, available to the world at reasonable prices as well as available to sustain certain levels of food aid. The developing countries need food security in the literal sense so that they can proceed with their development strategies without fear that their populations will be undercut. Importantly, too, they look to some international coordination, broadly conceived and subscribed to, as crucial to World Food Security.

In these grain negotiations, the U.S. role has been significant in the progress made to develop a new Food Aid Convention that would be part of an overall wheat agreement. For some time the United States has proposed a new 10 million ton food aid commitment level per annum with a U.S. component of 4.47 million tons. While this component is less than current U.S. food aid shipment levels, it is a very substantial increase in its minimum commitment. Canada and Australia also have indicated that they will increase their contributions.

And the U.S. proposal to the Congress for a 6 million ton international emergency reserve, if approved, would be a welcome initiative. I believe the proposal is responsive to the needs of developing countries since it would assure that the U.S. food aid program would be sustained under conditions similar to 1973-74 when concessional assistance was greatly reduced.

The Mellor paper refers to food aid from time to time and uniformly assigns to it a significant and positive role in overall economic growth. I would agree. One of the targets emerging from the 1974 World Food Conference was an annual food aid target of 10 million tons of cereals. This target, unfortunately, has not yet been achieved; a new Food Aid Convention as I just discussed would constitute a significant breakthrough in achieving the goal. On the other hand, the United States, in its 1979 budget presentation proposed no increase in food aid over 1978, presumably until it could be demonstrated that additional food aid could be used effectively. Is food aid being used effectively? Is it an incentive to elicit agricultural development in developing countries? Or is it a disincentive? Many hold the view that the latter is true. These **are** questions rather than answers; but with food aid such a substantial component of foreign assistance these questions are pertinent to any discussion of development strategies.

The United States has been leader in terms of magnitude of food aid and its application to development. There are ways to expand this leadership. It can do so by

focusing its talents and more of its resources on food aid; it could do so in greater magnitude on a multilateral basis. The World Food Programme is the modality of multilateral food aid. It has not yet reached its target for the current 1977-78 biennium and looks toward the 1979-80 pledge period with a target 25 per cent greater than the current biennium. It is a program based on food-for-work-project aid which converts food into development.

In my brief comments today, I have tried to identify a specific element or two that might be used in filling out some of the spaces left open by Mellor's broad approaches. I believe his concepts are on the mark as a general guide to tour the complex field of development. His paper offers a solid basis for interested persons here today wishing to probe this important subject. Also, I have tried to identify some areas where the role of the United States is crucial and to editorialize somewhat on these areas. If I have raised some doubts and some questions, it is because my experience with the Third World, mainly in the Washington context, leads me to be suspect of formulas and strategies.

While I have not done so in this opening statement because of time constraints, I hope there will be opportunity in the course of the discussion to comment on those parts of the Mellor paper dealing with the stage at which particular countries became agricultural commodity purchasers. One general statement will suffice for purposes of my opening statement. Dr. Hardin referred to it this morning in his keynote address. My experience leads me to believe that the purchase of food to maintain reasonable consumption levels of populations is a top priority for most countries; developed, less developed, or centrally planned. If not assured of such supply through food aid or other means, most countries will use foreign exchange, even though it is extremely scarce, to import food. This may result in damage to some other activity or program, but it will be done. That kind of an attitude and that kind of policy should be built into your thinking.

Most countries can fashion a system to procure the food and get it to the consumer, be it through price subsidies, ration shops, free distribution, or other means. Therefore, I would argue, for example, that the U.S.S.R. entry into world food markets results in great part from a political decision to take account of the consumer, and the implications of his interests. In the early 1960's, the political decision was not to do so. With respect to Indonesia, I agree that it is a good bet for increased agricultural trade. However, I give little credit to its oil resources for the trade developments in that country. Certainly, these resources will support trade and help Indonesia's currency reserves. But its political leaders for some years have decided to "protect" the consumer and become a substantial customer in cereals and other commodities. They have done so with a prudent eye on concessionally financed imports, but they have not hesitated to buy commercially when there was doubt as to the availability of concessional arrangements. I repeat that my experience, mostly with developing countries, tells me that political motivation to purchase essential food outranks any kind of formula or strategy.

Finally, I would submit that the most important ingredient in the development process, or in the implementation of development strategy, is the degree of dedication involved on the part of both the donor country and the recipient country. The process is so complex and so susceptible to pitfalls, that it needs the sustained nourishment of political will. In terms of a TV commercial, no strategy should leave home without it.

Thank you.

Agricultural Trade in the 21st Century

The Role of the MTN Today

Ambassador Alan Wm. Wolff*

It is a pleasure to be here in the heartland of our nation. One cannot fly into this city without noticing the signs of America's agricultural abundance — the grain elevator, feed yards, and vast expanse of growing crops. These are signs of agricultural success, signs that we live in a nation that has succeeded in breaking through the historical barriers to abundant food production.

This breakthrough has significantly enhanced the standard of living in the United States and, through its impact on international trade, has enhanced the world's standard of living. Other nations have come to depend on us as reliable suppliers of agricultural products. Japan, for example, has come to rely on the United States to supply a major proportion of its total oilseed consumption, an important element in the Japanese diet. In fact, there is more land under cultivation in the United States for the feeding of the Japanese people than there is in Japan itself.

The European Community (EC) looks to the United States to supply a large part of the feed used to support its domestic livestock sector. Without U.S. feed, European consumers would eat considerably less livestock products. Likewise, in the less developed world, where the availability of foodstuffs means the difference between life and death, we ship 50 per cent of all imported food grains.

Despite our willingness to share our food abundance, no other nation can claim a standard of food consumption equal to our own. U.S. consumers use only 20 per cent of their spendable income to purchase food, a level significantly less than Europe and Japan's figure of 30 per cent. Per capita beef consumption in the United States equals more than 123 pounds compared to 9 pounds in Japan and 57 pounds in the European Community. Even Switzerland, a nation which boasts a per capita GNP of \$9,300, or 20 per cent above the U.S. per capita GNP, only has a per capita beef consumption of about 53 pounds.

The question then is: If the United States is willing to share its abundance, why is the rest of the world so far behind us in increasing its standard of food consumption and, thereby, enhancing its standard of living? Part of the answer to this

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question lies in the fact that U.S. abundance obviously is not large enough to feed the world in the manner to which Americans have grown accustomed. The other part lies in the fact that other nations, especially developed nations, impose barriers to imported food — barriers that increase the price of imported food to unaffordable levels, prices that discourage consumption.

An example is Japan, where beef imports are controlled through restrictive quotas, the average price of boneless sirloin beef is around \$15 per pound, compared to the United States, where the same cuts can sell for less than \$2 per pound. Another example is the European Common Market, where a bushel of corn is priced at \$6.00 despite the fact that U.S. exporters are willing to land corn in Europe for \$3.25. The list of trade barriers that raise the prices of food to consumers goes on and on. Even the United States has restrictions that keep food prices unnecessarily high.

This brings me to the main focus of my remarks — the Tokyo Round of trade negotiations. Some 100 nations are participating in this round of trade negotiations, the seventh round since World War II. Each round has had as its major objective the reduction of trade barriers and the expansion of international trade.

One of the key challenges in the Geneva talks is how to integrate agriculture into the multilateral trade negotiations so that the world achieves an improved standard of food consumption, and efficient production will not go to waste or land lie 'unnecessarily idle. At an earlier date, this question could be regarded as academic, theoretical, and remote. Today it is a central issue to be resolved.

Given our interest as the principal agricultural trading nation of the world, the United States has taken a leadership role. This was not done lightly or easily. No nation is enthusiastic about reducing its agricultural trade barriers despite the fact that it is in their overall long term national interest to do so. Progress can be made only through the exchange of reciprocal trade concessions with others. To encourage others to make their concessions, the United States put a substantial offer on the table. In January of this year, we stated to the other 97 countries in this negotiation that we would reduce our tariff and nontariff barriers on nearly \$3 billion of U.S. agricultural imports, as well as \$45 billion of nonagricultural imports.

Frankly, to this time, the response to our offer has been disappointing particularly in agriculture. Ambassador Strauss and I are very concerned, not only because of the implications this has for a successful Tokyo Round, but for the implications it could have for the future of the world trading system.

But as you know, the reduction of trade barriers is a long, hard process. In modern times, it began in 1934. Since World War II, the nations of the world have completed six rounds of multilateral trade negotiations, chipping away at trade barriers that impede the growth of world trade.

Unfortunately, agriculture has not played a major role in the previous negotiations. This is significant when we consider that expanded agricultural trade is in the common interest of all countries and integration of agriculture into the General

Agreement on Tariffs and Trade (the GATT) could lead to expanded trade in agricultural products.

The last attempt to integrate agriculture into the trading system occurred during the Kennedy Round. It has the reputation in our agricultural community of a failure, although our exports have nevertheless grown markedly during this last decade. The reason for this view is that the major trading countries failed to come to grips with providing for even the most rudimentary international cooperation in agricultural trade. The U.S. farm community has insisted on a larger role in this Tokyo Round of trade talks, and Bob Strauss and I, and your elected representatives, are fully committed to that goal. If this round fails to reduce agricultural trade barriers, if it fails to provide some understanding of what conduct is fair and equitable, these goals might not be achieved for many decades.

If this were to occur, we would lose the opportunity to bring agriculture into the trading system, and most of all, the world would lose the chance to move toward achieving a more rational, economically efficient world food system. Importing countries would not have the opportunity to achieve a higher standard of living through the reduction of agricultural trade barriers. And exporting nations would continue to face the problems of overabundant food production while hunger remains in other parts of the world.

This is not to say that we do not recognize the social and political need of countries to support their agricultural capability. We believe, however, that the time has come for nations to begin the adjustment toward a more rational agricultural system — a system in which the world's limited food resources can be utilized most efficiently; a system where consumers can have the opportunity to enjoy a higher standard of consumption with regard to basic food commodities, regardless of the geographic region where such commodities may be produced.

We believe it is time to begin the process of working toward this rationalization of our agricultural systems. We believe it is time to do this through a reduction in trade barriers. Moreover, in our inflation-plagued world, it makes good sense to reduce barriers that maintain high food prices. We do not expect nations to eliminate their barriers immediately. But it is reasonable to ask them to begin the process of reducing those barriers.

We are insisting that the world agricultural trading system be designed to encourage rather than inhibit the development of more trade. We are insisting that this should lead to a rationalization of world agricultural production, utilizing the comparative advantages of each nation. We believe this would lead to long term benefits for consumers of all nations, much as the growth in trade in non-agricultural production since World War II has improved living conditions and increased employment both here and abroad.

The facts speak for themselves. In the decades after the end of the second World War, there was unprecedented world economic growth and prosperity. Expanding trade was one of the principal engines of that growth. It was no mere coin-

cidence that the period was marked by a progressive dismantling of trade **barriers** under the GATT. Year after year, increases in international trade exceeded increases in world production. No one can argue with any credibility that our nation, and the world as a whole, has not benefitted very substantially from this development.

This was particularly true for U.S. agriculture. We became the world's largest exporter of agricultural products — over \$24 billion worth in 1977. We became one of the world's largest importers of food products, over \$13.4 billion in 1977. In terms of individual commodities, we are extremely large exporters. For example, exports of **oilseed** and **oilseed** products amounted to over \$6 billion in 1977. We account for 43 per cent of the world's exports of wheat and 63 per cent of the world's exports of coarse grains. While much has been made of imports of **oilseed** products like palm oil, imports of all **oilseeds** and their products totaled only \$650 million or only about one-tenth of our exports in 1977.

As a result of trade balances like these, we have stressed strongly the benefits of freeing up world agricultural trade even though such freedom can increase market risks. The benefits from freer trade are similar to the benefits from freer domestic markets toward which the U.S. farm industry has been moving slowly over the past several decades. Exposure to greater market risks has caused individual producers to protest, but it has kept our agricultural industry highly competitive in world markets.

In those world markets, the existence of GATT disciplines could reduce risks of agricultural trade, much as our domestic farm programs tend to lessen risks of domestic farm production. Our focus in the Geneva trade talks has been to **expand** opportunities for agricultural trade through a strengthening of the world trading framework. We believe this should be a common goal of these negotiations.

The question then is how can we proceed in the Tokyo Round to bring agriculture into the **GATT** trading system. I believe this can be done by means of a two-track approach. First, we should achieve tangible results in the Tokyo Round by reducing tariff and nontariff barriers, as well as by achieving additional disciplines on the use of specific export subsidies. Tangible results can take the form of reduced tariffs, expanded quotas, liberalized licensing systems, and the removal of standards designed as barriers to trade, to name a few concrete examples.

The question of export subsidies must also be adequately dealt with. Export subsidies, in particular, have been a long-standing problem in the trade of primary products. The successful negotiation of a code which would discipline the use of export subsidies for agricultural commodities would provide, in my view, a necessary element for a successful Tokyo Round package.

I do not underestimate the value of the specific concessions that could be exchanged. But this is not enough.

It is time that we took a second step to establish a world forum within GATT for resolving conflicts between internal farm and food policies and policies related to

international trade in agricultural products. In other words, nations would for the first time be accountable to the international community for the impact of their individual agricultural policies on world trade. What is surprising about international trade in agriculture is that although we are so highly dependent on foreign markets as outlets for our production, and foreign countries are so dependent on this nation as a source of supply, we do not have serious and regular consultations in the GATT on overall national agricultural policies, nor effective guidelines to avoid behavior that seriously interferes with trade.

I believe that there is a possibility for establishing a forum of this kind within GATT during this negotiation, a forum that would work toward resolving trade questions related to agriculture. Such a forum might carry out several specific tasks that would relate to freeing up trade in agricultural and food products.

1. For example, such a forum might conduct an annual review of national policies and international commodity arrangements. This review would include an examination of how responsive national prices have been to changes in world supplies and trends in consumption patterns.

2. Such a forum might also review changes in historical patterns of agricultural trade and changes in market shares of individual exporting countries. This review could examine the degree to which countries use unfair trade practices to increase market shares. Such practices include the use of export subsidies and the dumping of surplus agricultural products on world markets.

3. Such a forum might also review progress toward the general objective of rationalizing world agricultural production along lines of comparative advantage, taking into account national food and agricultural programs and the operation of international arrangements for individual commodities, including the international grains agreement and international arrangements for meat and dairy products.

Finally, such a forum could watch over the world food systems for the purpose of achieving what many scholars of agricultural economics have called, including a speaker here today, Dr. D. Gale Johnson, equity and fairness. Dr. Johnson has often pointed out that nations that stabilize their domestic agricultural sectors through trade barriers, transfer the instability of their farm sectors to other nations. In essence, stability for one nation comes at the cost of instability for others. We would maintain that those costs should, in fairness, be shared through an open international trading system.

I am convinced that some type of forum like this could assist nations in expanding world trade in agricultural products over the next century. On the other hand, I am equally convinced that if no progress is made in this round of negotiations toward resolving the serious potential conflicts facing trade in agricultural products, the next few years will likely witness further efforts to restrict the flow of farm products. The result would be a continuation of unduly large food costs for some nations, disruptive price increases for others during international droughts, and a repetition of many of the other unfortunate occurrences of the recent past.

Let me turn to other aspects of the MTN. A brief review of other key areas under negotiation should give you a better idea of (1) what is at stake overall in the MTN, (2) what we have been seeking for agricultural interests, and (3) how these particular interests might be accommodated.

Tariffs. In January, this year, the United States and other major developed countries tabled comprehensive offers for tariff bamer reductions on both industrial and agriculture products. This set the basis for a significant reduction of tariffs which, in my view, were an essential corrective on the distortions that are still causing high tariff protection. A substantial tariff cut is still seen as the clearest possible declaration of the determination to continue postwar efforts to reduce trade barriers and resist a drift toward protectionism.

Given developed country interest in expanding international trade, one might assume full support for a significant reduction of tariff bamers. It would seem to be a common goal of all countries to remove the trade distorting effects of tariffs. In fact, support for tariff cuts has been limited, especially for agricultural products. There has been widespread exaggerated concern that tariff reductions will harm food producers. This has been true of some in this country as well, despite the obvious gains from expanded agricultural trade of the past few years.

Subsidies and Countervailing Duties. No subject in the trade negotiations causes quite the same amount of emotion as this one. Government export aids are often used by most nations despite their effect on the trade interests of others. The application of offsetting or countervailing duties on the subsidized trade is often regarded not as a trade neutral measure, but as a direct political and economic attack on the sovereign policies of the subsidizing country.

To avoid a large number of very serious conflicts in the future, international agreement must be reached on what trade conduct is acceptable, both in terms of the granting of subsidies, and other countries' reactions to these aids. The international community will have to face squarely the acceptability of subsidization of primary products, such as grains and oilseeds. We continue to feel that such actions are disruptive and unwarranted. Our basic position is that the trading systems should lead to the removal of trade subsidies and countervailing duties. Our belief is that firm and lasting trade relations are based on a mutuality of interest in more efficient patterns of production and trade. This is particularly true in agriculture where gains to consumers would be so significant.

Finally, let me close with a few general words on the agricultural component of these trade negotiations. They deserve special mention for several reasons. For one, agriculture is of interest to all the nations — all are food consumers. For another, the issues in agricultural trade are of fundamental economic and social concern, which means that they also have a particularly great political importance. Third, food issues touch on national security sensitivities which add to the protectionistic tendencies of nations. For these reasons, agricultural trade problems are both important and enormously difficult to solve.

The U.S. view in this round has been that, despite their intractability, the problems of agricultural trade must be addressed and the efforts of solutions made an essential part of the broader trading system. This belief is built on several basic concepts.

We believe that international cooperation in agricultural trade can enhance the ability of individual countries to improve the welfare of their farmers and consumers;

We further believe that international cooperation can lead to a continued expansion of international trade in agriculture;

Finally, we believe that international cooperation can lead to national policies and programs that promote improved patterns of agricultural production and a more equitable sharing of the burden of adjustment during periods of oversupply or scarcity.

These basic concepts underlie our negotiating efforts in Geneva for agricultural trade. We recognize that there is considerable linkage between these negotiations and the domestic policies and programs of participating countries. This is, of course, inevitable. It also explains why agriculture has traditionally been excluded from trade negotiations. Regulation has grown up over the decades as governments attempted to solve social problems of rural migration, rural underemployment and low farm incomes, as well as political problems of social unrest and voter dissatisfaction in rural areas.

We believe that the time has now arrived to begin the process of counting among the costs of national farm programs the adverse impact on trade in farm products. It is this objective that we have stressed in the negotiations and which we believe holds much promise for expanding the trade in agricultural products in coming decades. Such an expansion could lead to improved standards of food consumption for other nations and thereby to higher standards of living. This after all is the objective of the multilateral trade negotiations.

I am optimistic that the MTN can produce a comprehensive set of new agreements which, in the process of reducing trade barriers and strengthening the GATT framework, will encourage fuller integration of world agriculture into the trading system. But there is quite a bit of work to be done and active participation of all countries and all groups here at home will be necessary for getting the job done.

Foreign Demand and Export Potential For U.S. Farm Products

Howard W. Hjort*

A general improvement in world economic conditions, coupled to efforts by many nations to improve their people's diets, has resulted in a rapid expansion in world demand for agricultural products. This has translated into a growing demand for American-produced farm products and a rapid expansion in exports.

U.S. agricultural exports have increased faster than domestic **consumption**—increasing the proportion of total domestic production shipped overseas. While the world turns even more to the United States for its food supplies — the U.S. farmer has become more dependent upon foreign markets as a source of income.

In a world made more interdependent by rapid economic growth, the welfare of the U.S. farm economy has been irreversibly linked to events in foreign markets, including production variability, economic growth, and trade policies. Wide fluctuations in world food supplies and prices during the 1970's have focused attention on a number of longer term issues that relate to future growth and stability of U.S. exports:

- Will the developing world continue to rely on the developed countries for food imports?
- What will the future relationship be between grain used for food versus grain used for feed?
- Do the major exporters have the long term capacity to meet growing world demand?
- What institutional factors will help or hinder export expansion?

For background purposes let's look first at where the United States is and who the principal actors are in the growth in U.S. exports.

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World Economic Growth and Composition of U.S. and World Agricultural Trade

The changing nature of world import demand for agricultural products has greatly altered the commodity composition of world agricultural trade and the market potential for some products.

The most significant change in the commodity composition of world agricultural imports over time has been the relative increase in importance of food and feed imports at the expense of raw agricultural materials. The value of world imports of food products (primarily animal products and foodgrains) increased \$54 billion from 1965 to 1976, while the import value of agricultural raw materials increased only about \$8.5 billion (Table 1).

The structural changes in U.S. agricultural exports paralleled these shifts in demand. During 1960-64 cotton and tobacco accounted for 21 per cent of U.S. agricultural exports; today they account for only 11 per cent. Food exports have remained at about 50 per cent of the total value of U.S. agricultural exports. The principal factors underlying the change in commodity composition of U.S. exports have been (1) the rapid rise in feedgrains — from 13 per cent of total agricultural exports in 1960-64 to over 20 per cent currently — and (2) the rapid rise in soybean exports — from 8 per cent of total exports in 1960-64 to 17 per cent currently. Growth in these two commodities has accounted for 46 per cent of the \$17.6 billion growth in value of U.S. exports since 1960-64 (Table 2).

Currently, sales to developed countries account for about 60 per cent of all U.S. agricultural exports, while the developing countries account for about 30 per cent. The Centrally Planned Countries account for the remaining 10 per cent (Table 3). Developed and Centrally Planned countries primarily import feedgrains and oilseeds, while the developing countries emphasize foodgrain imports.

Let's take a moment to examine the top markets for U.S. agricultural exports (Figure 1). Japan, with nearly \$4 billion worth of U.S. farm products imports annually, is by far the 'largest single country market for U.S. farm exports. Agricultural exports to Japan have increased at an annual rate of about 15 per cent in the past 15 years. This country is our top market for soybeans, feedgrains, hides, and skins. It is also a very important market for our wheat, cotton, fruits, nuts, and vegetables and many other products (Table 4).

West Germany follows as the second best market for U.S. farm products; it is only about half as large as the Japanese market. West Germany, as you know, is a member of the European Community (EC). The EC protects its agriculture by the Common Agricultural Policy (CAP), which has hampered the demand for our grains and other products, but has improved our position for soybeans and some feedstuffs not covered by CAP. Other members of the EC — especially the Netherlands, Belgium, the United Kingdom, Italy, and France, are also important markets.

Table 1

ORIGIN OF GROWTH IN WORLD AGRICULTURAL IMPORTS, 1965-76

Import Commodity Group	Increase in World Imports 1965-76	Developed		Importing Regions	
		Total	U.S.	Less Developed Total	Centrally Planned Total
	Billions of Dollars	-----	-----	-----Per Cent-----	-----
Food Products	54.09	61.00	8.3	25.5	13.5
Animal	15.77	75.7	6.9	20.7	3.6
Food grains	10.44	25.4	—	55.8	18.8
Fruits and nuts	3.06	69.3	4.3	17.6	13.1
Vegetables	2.30	76.5	2.6	16.5	7.0
Sugar and honey	7.29	41.8	9.7	25.1	33.1
Beverages and spices	9.17	83.2	23.2	7.2	10.0
Vegetable oils*	3.69	59.6	0.8	28.7	11.7
Wine and beer	2.37	68.4	15.6	10.1	22.0
Feed Products	19.72	65.9	0.6	8.8	25.3
Feeding stuff	3.02	69.2	-0.7	7.3	23.5
Feed grains	9.46	54.9	-1.9	11.6	33.5
Oilseedst	7.24	79.0	4.3	5.7	15.3
Agricultural Raw Material	8.41	63.4	9.8	16.8	19.9
Tobacco	1.87	76.5	14.4	12.8	10.7
Rubber	1.18	79.7	30.5	—	20.3
Fibers	4.11	50.1	-2.9	22.6	27.3
Vegetable oils‡	1.25	72.0	24.8	19.2	8.8
Total of above commodities	82.22	62.4	6.6	20.6	17.0
Residuals	15.20	73.4	8.7	21.3	5.6
World agricultural trade	97.42	64.1	6.9	20.7	15.2

*Includes SITC 421, 091 4, and 1/2 of 221.4.

†Includes all of SITC 221 except for 1/2 of 221.4

‡Includes all of SITC 422

§Includes commodities not separately listed and/or whose individual value is less than \$5 million

SOURCE: FAO Trade Yearbook, 1971-76

Table 2

COMMODITY COMPOSITION OF U.S. AGRICULTURAL EXPORTS, 1925-77

Commodity	1925-32	1933-40	1940-44	1945-49	1950-54	1955-59	1960-64	1965-69	1970-74	1975	1976	1977
	Millions of Dollars											
Food	577	216	1,003	2,147	1,549	2,010	2,819	3,114	6,187	11,108	10,318	10,434
Wheat and flour	190	42	46	926	689	736	1,266	1,172	2,479	5,293	4,040	2,883
Rice	9	6	25	74	120	114	160	297	470	858	629	731
Other food grains and preps.												
N.E.C.	33	7	38	76	37	51	67	80	153	211	212	233
Meat and animals	72	28	325	179	54	95	157	182	340	584	878	847
Dairy and eggs	17	8	295	339	111	229	172	143	133	153	150	203
Lard	87	19	81	86	84	68	54	31	31	24	35	39
Fruits, nuts, vegetables and prep.	124	87	130	278	224	358	420	476	723	1,469	1,685	1,875
Other food and beverages	27	13	39	126	92	72	92	162	379	423	378	469
Food oils and oilseeds*	18	6	4	63	138	287	431	571	1,479	2,093	2,311	3,155
Feed and Farm Input	71	41	33	247	366	623	1,100	1,868	4,367	7,852	9,222	8,866
Feed grains	40	26	16	188	275	412	693	1,059	2,353	5,246	5,993	4,874
Feeds and fodder	23	9	3	18	24	63	138	343	838	987	1,361	1,565
Soybeans*	0	2	1	12	46	106	213	382	1,036	1,433	1,658	2,197
Seeds and breed animals	8	4	13	29	21	42	56	84	140	186	210	230
Raw Materials	864	454	271	895	1,337	1,304	1,448	1,352	2,251	2,924	3,457	4,371
Cotton	695	322	139	525	871	675	737	431	753	1,001	1,057	1,538
Tobacco	132	111	92	265	294	350	392	485	657	877	940	1,109
Tallow	0	0	1	11	58	101	113	145	267	299	377	504
Hides and skins	8	5	2	14	27	61	83	132	261	291	518	577
Ess. oils, starch	8	5	15	22	15	18	22	41	77	101	131	132
Vegetable products	21	11	22	58	72	99	101	118	236	355	434	511
Total exports	1,512	711	1,307	3,289	3,252	3,937	5,367	6,334	12,805	21,884	22,997	23,671
	Per Cent Composition											
Food	38	30	76	65	48	51	53	49	48	51	45	44
Feed	5	6	3	8	11	16	20	30	34	36	40	37
Raw materials	57	64	21	27	41	33	27	21	18	13	15	19

*one-half of soybeans is recorded as beans and me-half is recorded as oil for food consumption

SOURCE: U. S. Department of Commerce. "U. S. Exports and Imports Classified by OBE Ed-use commodity categories 1923-1968, OBE-SUP 70-01; U. S. Department of Agriculture Foreign Agricultural Trade of the United States, Statistical Reports, Annuals 1969-77

Table 3

DESTINATION OF U.S. AGRICULTURAL EXPORTS, 1975-77

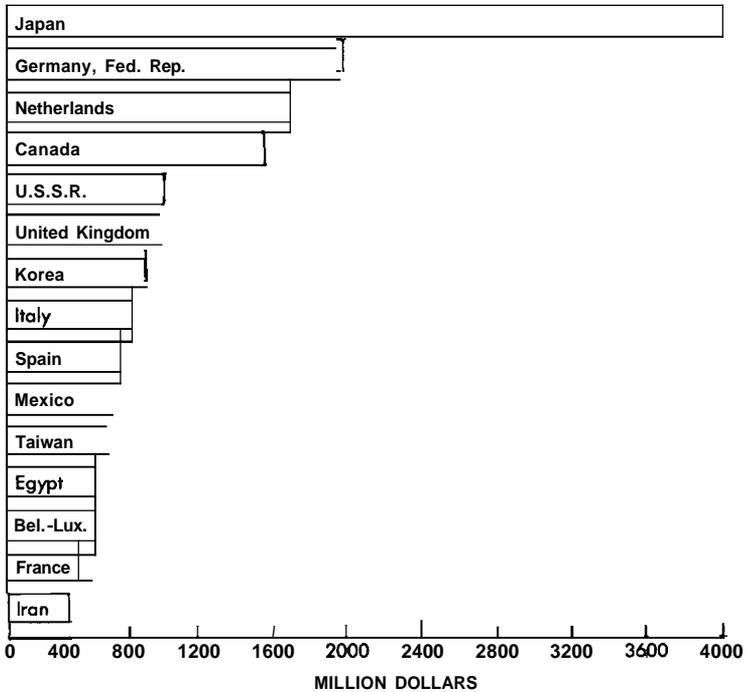
Commodity and Year	Developed Countries	Developing Countries	Centrally Planned	World
		Per Cent		
All agricultural products				
1975	57	35	8	100
1976	60	30	11	100
1977	62	31	7	100
All cereals				
1975	46	42	13	100
1976	48	35	18	100
1977	50	37	13	100
Wheat and products				
1975	26	60	14	100
1976	25	64	10	100
1977	25	58	17	100
Rice				
1975	17	82	2	100
1976	29	68	3	100
1977	22	74	4	100
Feedgrains				
1975	78	17	13	100
1976	65	11	25	100
1977	70	18	12	100
Soybeans				
1975	90	9	1	100
1976	86	9	6	100
1977	84	11	5	100

SOURCE. Arthur B. Mackie, "World Economic Growth and Demand for U S Farm Products," WEC-12. ERS, USDA. August 1977

The Centrally Planned countries have become increasingly important outlets for our grains and oilseeds. This year the Soviet Union will buy about \$1.8 billion worth of our food and fiber products; Eastern Europe, \$1.2 billion; and the People's Republic of China, over \$300 million. In the past these countries have accounted for much of the variability in U.S. exports, with sales ranging from over \$3 billion in FY 1977/78, compared with slightly over \$400 million in 1972.

The other important component of our top fifteen markets is the developing countries. With the exception of Egypt, these markets are nearly all cash commercial markets — not P.L. 480 recipients. South Korea and Taiwan are our fastest growing export-oriented markets in East Asia. These markets were developed from concessional P.L. 480 markets to major commercial markets in the last two decades.

Figure 1
FIFTEEN TOP MARKETS FOR
U.S. AGRICULTURAL EXPORTS, 1977



USDA/ESCS

MARCH 1978

The large petroleum exports of Iran and, to a limited degree Mexico, have provided the means for the expansion in our exports to these countries and to other OPEC members. Our exports to OPEC increased to \$1.7 billion in 1977 from \$440 million in 1972.

IMPORTANCE OF U.S. AGRICULTURAL EXPORTS

U.S. agricultural exports have increased 600 per cent during the past 20 years (\$3.3 billion in 1951-55 to \$23.33 billion in 1976-77), and almost half of the increase has been since 1966-70 (Table 5).

Table 4

**GROWTH OF U.S. COMMODITY EXPORTS BY DESTINATION,
FISCAL YEARS 1972 TO 1977***

Destination	Oilseeds and Products	Feed- groins	Wheat and Products	Animal and Animal Products	Cotton	Fruits and Vegetables	Tobacco
	----- Per Cent -----						
Europe	57	56	28	32	13	30	38
EC-9	42	38	1	24	5	24	25
Other Western							
Europe	8	10	2	5	8	5	11
U.S.S.R.	5	3	21	—	—	—	—
Other Eastern							
Europe	2	5	4	3	—	1	2
Asia	26	30	37	35	80	26	38
Japan	15	21	12	18	21	14	21
People's Republic of China	—	—	—	—	—	—	—
Other	11	9	25	17	59	12	17
Latin America	8	9	13	12	—	10	5
Mexico	4	5	—	3	—	1	—
Other	4	3	13	9	—	9	5
Africa	2	3	19	7	5	3	15
Oceania	1	—	—	1	—	1	4
North America (Canada)	4	—	1	13	2	30	—
Other	2	3	2	—	—	—	—
World	100	100	100	100	100	100	100

*Based on annual October-September U.S. agricultural export statistics as summarized from U.S. Bureau of Census data.

Table 5
U.S. MARKET SHARE OF WORLD TOTAL AND AGRICULTURAL EXPORTS
BY FIVE YEAR AVERAGES, 1951-77

Year	Total Exports			Agricultural*			Share Agricultural of Total Trade in	
	World	U.S.	U.S. Share	World	U.S.	U.S. Share	World	U.S.
	<u>Billion U.S. Dollars</u>		<u>Per Cent</u>	<u>Billion U.S. Dollars</u>			<u>-----PerCent-----</u>	
1951-55	84.82	15.20	17.9	26.80	3.30	12.3	31.6	21.7
1956-60	113.32	19.06	16.8	31.62	4.26	13.4	27.9	22.3
1961-65	157.52	23.76	15.1	38.67	5.64	14.6	24.5	23.7
1966-70	248.00	35.05	14.1	47.60	6.54	13.7	19.2	18.7
1971-75	610.09	73.22	12.0	96.11	15.73	16.4	15.9	21.5
1976 Prel.	991.07	113.13	11.4	138.00	22.99	16.7	13.9	20.3
1977 Est.	1100.00	117.90	10.7	146.00	23.67	16.2	13.3	20.1

*World agricultural exports include SITC Sections 0, 1, 2, and 4, but exclude Divisions 03, 24, 25, 27, and 28

SOURCE Arthur B Mackie, Foreign Economic Growth and Demand for U S Farm Products, WEC-12, August 1977, pp. 23-34

Table 6

U.S. CROP ACREAGE HARVESTED, TOTAL AND FOR EXPORT

Year	Food Grains	Feed-Grains'	For export			Total	Total Harvested†	Acreage Diverted*
			Oil Crops	Cotton	Other Crops			
				Million acres				
1951-55	19	9	4	6	4	42	5	—
1956-60	23	13	9	7	3	55	324	24
1961-65	31	21	13	4	3	72	298	57
1966-70	25	14	18	4	4	65	297	54
1971-75	35	20	26	5	4	90	317	24
1975	39	26	26	4	5	100	336	0
1976	32	26	31	5	8	102	338	0
1977 Prel.	39	26	30	4	5	104	342	0

*Includes feed required to produce livestock products exported.

†Area in 59 principal crops harvested as reported by USDA's Statistical Reporting Service plus acreages in fruits, tree nuts, and farm gardens

‡Total diverted or set aside under various programs, Agricultural Stabilization and Conservation Service, including limited acreage devoted to substitute crops

The U.S. share of world agricultural exports has increased from 12.3 per cent in the early 1950's to 16.5 per cent in 1976-77. Consequently, during this period U.S. agricultural exports increased faster than world agricultural exports — increasing about 9.0 per cent per year, while world agricultural trade grew at about 7.0 per cent per year.

U.S. domestic consumption increased at about 4.5 per cent per year during the same period. As a result, an increasingly important share of many farm commodities is exported.

During the 1972-76 period over half of U.S. wheat production (59 per cent), soybean production (51 per cent), and rice production (51 per cent) was exported. More than a third of U.S. cotton and tobacco production (36 per cent each) was exported in 1972-76. More than a fifth of U.S. corn (21 per cent) and grain sorghum production (25 per cent) was exported in 1972-76 — primarily for use as animal feeds in developed countries.

Since 1975, production from about 100 million acres (almost one of each three acres harvested) was exported, compared to one in four in 1961-65 (Table 6). Last year about 40 per cent of the 104 million acres harvested for exports were wheat and rice, while feedgrains (primarily corn) accounted for 26 per cent and oilseeds (primarily soybeans) for 30 per cent.

Table 7

**U.S. MERCHANDISE TRADE, AGRICULTURAL AND NONAGRICULTURAL,
BY FIVE YEAR AVERAGES, FY 1951-77**

Fiscal Year*	Exports			Imports			Trade balances		
	Total	Agri-cultural	Nonagri-cultural	Total	Agri-cultural	Nonagri-cultural	Total	Agri-cultural	Nonagri-cultural
	Billions of Dollars								
1951-55	14.68	3.26	11.42	10.58	4.42	6.16	4.10	-1.16	5.26
1956-60	18.52	4.10	14.42	13.40	4.00	9.40	5.12	0.10	5.02
1961-65	22.90	5.46	17.44	16.74	3.88	12.86	6.16	1.58	4.58
1966-70	33.62	6.50	27.12	30.34	4.88	25.46	3.28	1.62	1.66
1971-75	69.19	14.93	54.26	70.72	7.87	62.85	-1.53	7.06	-8.59
1976	111.28	22.76	88.52	114.51	10.51	104.00	-3.23	12.25	-15.48
1977	118.23	24.01	94.22	143.47	13.38	130.09	-25.24	10.63	-35.87

*Year ending June 30 for data 1951-70, year ending September 30 for data 1971-77

SOURCE U S Foreign Agricultural Trade Statistical Report, fiscal year 1977, FDIC, ESCS, USDA

Farm product exports have benefited both farm and nonfarm sectors by generating additional employment and income. With additional income earned from exports, U.S. farmers can purchase needed goods and services. For example, farmers' purchases of fuel, fertilizer, and other inputs to produce commodities for export require additional economic activity by U.S. manufacturing, trade, and transportation sectors. As a result, the purchasing power is spread throughout the total economy. It is estimated *that for each dollar* of agricultural exports about *two dollars* of domestic economic activity is generated.

Agriculture's contribution to our balance of trade has increased substantially in recent years. Net exports of U.S. farm products increased from about \$2 billion in the 5-year 1966-70 period to about \$12 billion in 1976 and \$11 billion in FY 1977 (Table 7).

Currently net exports of agricultural commodities have been large enough to offset a large portion of deficits in nonfarm items. In 1976, for example, agricultural exports offset all but \$3.23 billion of our trade deficit. This is a reversal from the early 1950's when agricultural trade was in a deficit position and non-agricultural trade brought about a positive trade balance. In those years, non-agricultural items posted a \$5 billion positive trade balance while agriculture was running a deficit of about \$1 billion. Over the years steady increases in agricultural exports, along with growth of nonfarm imports, have turned that situation around.

There is no doubt that the American farmer and our total domestic economy will benefit from expanded agricultural export sales. Let us now consider the potential for expansion and factors that will influence world trade in the future.

Export Potential

Besides year to year variation due to weather, future levels of U.S. agricultural exports will depend upon a number of factors. These are the rate of economic growth in both the developed and less-developed countries, the production and trade policies of other nations, and the national and international trade policies affecting production, imports, and trade between countries.

ECONOMIC GROWTH

The expansion of U.S. exports to developed countries may be relatively *modest* in the years ahead. Any increases will be due primarily to increased demand resulting from shifts in consumer demand to higher quality foods, such as meats and meat products. Most of the expected growth in food demand will occur in less developed countries. In these countries the income elasticity of demand is still high and greatly accelerates the growth in total demand for food when per capita income rises.

The ability of countries to meet their growth in demand through increased agricultural production varies greatly from country to country, depending upon the supply of agricultural land resources and capital. For example, Japan, with a limited supply of agricultural land available for production of feedgrains and feeds, has relied heavily upon imports to meet its demands. This dependence on imports has increased Japanese imports nearly in direct proportion to increases in total demand for feeds.

Conversely, in Western Europe available land resources for feeds and feed-grain production are comparatively more abundant, enabling these countries to have a greater reliance on domestic production for a larger proportion of their total feed consumption.

The Soviet Union has an abundant land base. However, their production is subject to major yield variability. This translates into a highly variable import demand. The Soviet import demand for grains has ranged from a low of less than 6 million tons in 1974-75 to a high of over 26 million tons in 1975-76. During the past two years grain imports have averaged 15 million tons.

FOREIGN AGRICULTURAL PRODUCTION AND TRADE POLICIES

Policies of major agricultural exporting and importing countries can have as much impact on future production and consumption patterns of food as the in-

teractions of economic variables. Almost all of the major grain producing and exporting countries have agricultural policies that support internal prices above the levels prevailing on the world market. For these policies to succeed it has been necessary for most countries to establish import barriers of some type — quotas, state trading, or variable levies. In addition, many countries use domestic production subsidies and high price supports, rather than import controls, to encourage domestic production.

In the grains area, the major trade policy affecting U.S. exports is the European Community's variable levy system, which prevents U.S. grains from entering Western European nations at competitive prices. And, because of high price supports, surplus grains are exported to other countries with the help of indirect and direct export subsidies. While the EC does not impose any levies or direct restrictions on imports of soybeans and soybean meal, there is a growing body of indirect restrictions having market impacts.

It is assumed that the EC will continue to use variable levies and export subsidies to control the flow of imports and exports. Price policies of non-EC countries in Western Europe will continue to be influenced by the price level of the community.

Japan does not have specific import levies, however, its internal price and marketing structure are such that the effect is the same. Japan controls its food grain trade to protect its rice industry. It pays producers high support prices on wheat and rice. It directly administers the wholesale price of rice and wheat flour to discourage increased wheat consumption. This in turn limits the growth of wheat imports. U.S. feed and soybean exports to Japan are free of direct import restrictions, although domestic food prices are influenced by government policies. Several U.S. products are affected directly by Japanese tariffs and quotas. Beef exports to Japan are restricted by an import quota system. Poultry and swine are subject to import duties. It is expected that the current import policies will be continued into the 1980's with every effort being made to manage the import growth of agricultural products.

Other major world traders such as Argentina, Australia, Canada, and the U.S.S.R. either use marketing boards or state trading agencies to market their commodities. As a consequence, the exports of these countries are often sold at prices below the competitive prices in the world market and, thereby, directly affect U.S. grain exports to countries without import barriers or trading restrictions.

Soviet foreign trade policy has generally emphasized self-sufficiency. Foreign trade policy in the U.S.S.R. is controlled by the Soviet leadership through centralized economic planning and regulatory organizations under the direction of the Council of Ministers. While the U.S.S.R. generally prefers bilateral trade within the eastern trading bloc, the Soviet Union has stepped up its imports of capital goods, technology, and agricultural products, especially grains, from the

developed market economies.

Soviet grain purchases in the early 1970's jolted the U.S. and world markets and led to a 5-year U.S.-U.S.S.R. Grains Purchase Agreement to help smooth out their sporadic import demand.

Future U.S.S.R. imports of grains are likely to increase, yet continue to be variable. The policy decision in the U.S.S.R. made in the early 1970's to make up crop shortfalls with imports to maintain livestock production and meat consumption levels is likely to continue and affect the actual level of U.S. exports in coming years.

The world's soybean market is dominated by a limited number of producer/exporter countries, primarily the United States and Brazil. Brazil's agricultural policy has been to expand soybean production and its export position in world markets since 1970. Soybean production increased from about one million metric tons in 1970 to about 12 million tons in 1977. Despite this year's poor crop, Brazilian soybean production will probably continue to expand so that it will increase another 50 per cent primarily by bringing more land into cultivation and substituting soybeans for wheat on existing acres. The substitution of soybeans for wheat production in Brazil has been under way since 1970 but was greatly accelerated in 1973 when the world price for soybeans reached \$392 per metric ton. Favorable price ratios for soybeans are expected to continue and add to increased export availabilities in Brazil and to some extent in Argentina.

Projections under different income growth and import demand alternatives for the world by 1985 indicate that the United States is likely to play an increasingly important role in the world's grain-oilseed-livestock economy. The United States is projected to continue to produce at least one-fifth of the world's grain, over one-third of the world's commercial output of meat, and approximately half of the world's commercial output of oil meal (FAER 146). It is projected that the U.S. share of the world grain and oil meal exports will be 50 to 60 per cent.

U.S. FARM POLICY IN TRANSITION

There has been a marked change in the food and agricultural policies of this nation since January 1977. In part, the policy changes are the consequence of events and circumstances; they are also due to our perception of the role and responsibility of our Government with respect to the United States and world food and agriculture system.

World weather patterns of 1972-75 were adverse to crop production in three of the four years. World and U.S. grain stocks, previously characterized as massive surpluses, were soon depleted. By the summer of 1974 it became evident that for the first time in modern history world consumption could not be maintained at the previous year's level.

The consequences of these years were:

- Food aid was reduced just when it was needed the most; and the poorer nations of the world could not afford to buy enough even to maintain inadequate diets;
- At home, food price inflation led the inflationary spiral; Crop producers enjoyed record prices and incomes, but livestock producers, faced with high feed costs, were forced into liquidation that, for cattle producers is only now beginning to slow. Grain fed to livestock declined sharply and today remains well below the level reached in the early 1970's; and Exports of agricultural products were controlled and for the first time our reputation as a reliable supplier of food in world markets was placed in jeopardy.

U.S. Export Policy – Expansion of U.S. export markets is an essential element of this administration's food and agriculture policies. At the same time we must be concerned about export stability. Sustained growth in farm income for U.S. producers has become increasingly difficult to achieve without continued expansion and lessening the instability in export markets.

World supply and price instability during recent years for a number of major agricultural commodities have pointed up the need to reassess U.S. export policies and promotion programs. Our export promotion programs are aimed at stimulating foreign demand, and a credit thrust designed to strengthen buying power in foreign countries with limited financial resources.

The success of any export promotion program depends to a large degree on a favorable policy environment here and abroad. The major components of the overall U.S. export strategy to provide this favorable environment include efforts to (1) improve the international trade climate, (2) meet foreign food assistance needs, and (3) develop foreign country information systems. Actions in these broader policy areas serve as the general guidelines for the design and operation of specific export promotion programs such as market development credit arrangements.

The United States continues to have strong interests in establishing a more liberal world trading environment that would permit our efficient agricultural producers to **expand** exports at reasonable prices, to give U.S. consumers access to a broader range of commodities at reasonable prices, and contribute to the growth of the developing countries.

Improve Trade Climate – In the Multilateral Trade Negotiations the United States has sought to secure greater access in foreign markets for agricultural exports through various measures, including tariff reduction or elimination and codes to govern the use of export subsidies and product safeguards. Progress is slow on these proposals because of differences between the United States and trading partners over agricultural negotiation objectives and procedures.

We remain modestly optimistic that there will be meaningful results for agricultural trade. It is our hope that the way will be cleared for participating coun-

tries to negotiate trade concessions and to improve GATT rules under which trade can move more freely in response to market conditions. One of the U.S. objectives is to maintain existing trade accessibility for agricultural products, with top priority to continued duty-free access for soybeans to the European Community.

Provide Stability – This factor is as crucial as any to successful agricultural policies. To achieve greater stability:

- The United States will be a reliable supplier of food and fiber products to those in **other lands** who depend upon our farm products.
- The United States will support a minimum 10 million ton food aid program and will provide up to one-half this amount no matter how tight our supplies might become nor how high our prices are.
- The United States will hold its share of world grain, oilseeds and cotton stocks, but we will not be the storehouse for the world.
- The United States will place commodities in excess of market requirements in reserve to prevent disaster prices to producers or consumers.
- The United States will encourage farmers to maintain ownership of stocks and reserves, instead of the government, except for our share for international emergency food needs.
- The United States will continue to encourage other nations to share the costs and benefits of commodity reserves.
- When our stocks and reserves are adequate, the United States will remove land from production, and encourage other nations to share in the costs.
- The United States will not impose export controls on agricultural products on the basis of an inadequate supply.
- The United States will take measures necessary to insure that excess commodities are placed in reserve instead of on the markets at depressed prices.
- The United States will not sell our agricultural products in world markets at subsidized prices or prices disastrous to producers.
- The United States will produce and sell only quality products at home and abroad.

With these tools, it becomes evident that there are methods to lessen the impact of cyclical and erratic fluctuations in world grain supplies and trade. The farmer-owned and farmer-controlled reserve program will help protect U.S. farmers and consumers from worldwide crop shortfalls or surpluses that bring damaging fluctuations in food prices upon the U.S. economy. With at least 670 million bushels of feedgrains and 330 million bushels of wheat in reserve, the United States can contribute to greater world stability.

Creation of this reserve supply of wheat and feedgrains in this country, however, does not deal directly with another critical problem facing many developing countries which must import grain — their lack of purchasing power, particularly in periods of world grain shortage. Since 1974, there has been an effort to deal with this problem through negotiation of an internationally coordinated system of nationally held reserve stocks. Too little progress has been made in these discussions.

Farm and trade policies of many countries taking part in the discussions are a major cause of world price volatility. Moreover, the size of an international reserve and the terms under which it is held could be greatly influenced by the outcome of these negotiations.

In the meantime, something needs to be done to assure the developing countries that their emergency needs will be met in periods of general scarcity. There is broad agreement that their longer term food security requires that they act now to increase their own food production. Their willingness to change traditional systems of production depends on their confidence that, if these efforts falter, they will have the resources to meet emergency needs by purchases in world markets.

The United States has agreed to increase its food aid commitment under the new Food Aid Convention (FAC) to 4.47 million tons of grain annually, up from 1.89 million tons since 1967. If other FAC donor countries collectively contribute more than the minimum U.S. pledge, then the United States will increase its contribution on a matching ton-for-ton basis. The United States will also propose special FAC provisions designed to increase food assistance to meet extraordinary situations in developing countries.

In addition to meeting minimum annual requirements under the Food Aid Convention, there are times when additional quantities of food aid are required. Historically, the United States and other exporters have been expected to respond to such special needs. A more equitable arrangement, however, would be to establish certain rules for sharing the responsibility for such increased food aid among present and potential donors in a new Food Aid Convention. In general, the United States proposes that, whenever food grain production in the low income developing countries is more than an agreed percentage below normal, all donor countries will consider a joint increase in food aid by up to an agreed percentage of each donor country's basic contribution under the Convention. The United States recommends up to a 20 per cent increase. If we meet our goal of a minimum 10 million tons of grains, this will provide up to an additional 2 million tons of aid during special emergencies.

Market Development – the Foreign Market Promotion Program is aimed at (1) maintaining and /or expanding demand for U.S. products in established markets, (2) developing demand for products — particularly U.S. commodities — in emerging markets, and (3) introducing new U.S. products into both established and emerging markets. Promotional activities are designed to supplement other factors such as price, quality, supply availability, and financing to give the U.S. product a competitive edge.

I believe that the plans this administration has will expand our exports, both in the short and long term. We know that stable growth in exports is a long range project that can't be accomplished over night.

Future promotion programs will have to blend demand stimulants, credit incentives, quality controls, and technology transfers into a well coordinated export

strategy if the U.S. international competitive advantage is to be exploited to the fullest.

Longer term planning, more detailed research, and a more flexible mix of export promotion and credit programs are needed. Creation of American agricultural trade offices in selected markets will allow greater coordination of the expanded government and private activities. Modifying market promotion programs to provide for multi-year market development plans with a wider assortment of countries and activities, and expanding credit programs to provide for intermediate financing could improve the effectiveness of these two basic programs substantially. Another method that we cannot ignore is the use of bilateral trade arrangements which offer expanded market opportunities for U.S. farm products in return for an assured supply over time. These arrangements have proved effective, notably with Japan, the Soviet Union, and Taiwan.

More effective export promotion will also require expanded and upgraded complementary programs in several areas including stronger quality controls. Effort is also needed to help develop or expand the processing and marketing infrastructure handling U.S. products in many of the more promising emerging markets of North Africa and the Middle East, parts of Latin America and Asia, and Eastern Europe. Greater efforts are also needed to coordinate export promotion programs with domestic farm, food, and overall balance of payment policies and other related foreign policy programs.

Without question the task before us is to take full advantage of the potential for increased exports through the continued implementation of reasoned and effective food and agricultural policies.

Discussion

Jimmye S. Hillman*

Dr. Hjort's paper is divided generally into two parts. First, there is a factual part which data are presented on world economic growth, levels and composition of U.S. and world agricultural trade, and the importance of agricultural exports to the United States. The second part deals with political and economic factors related to the export potential of the United States. Though Dr. Hjort's narrative is not so explicitly divided, my commentary will treat the paper in two separate segments.

U.S. AND WORLD AGRICULTURAL TRADE

The data and information are well organized and are presented in a useful fashion. The enormous growth and change in composition in U.S. and world agricultural trade are rightly noted. Washington just announced (May 18, 1978) an expected record value of U.S. agricultural exports of about \$25.5 billion for fiscal 1977-78. One must remember, however, that this figure, like many others on value, carries with it much price inflation. While the value of our exports over the past two decades has increased approximately sixfold, the physical volume has increased only between three to fourfold. Even so, that volume increase is still impressive.

Not shown so explicitly in these data and in those on composition are the trends over time in U.S. and world trade in processed farm products. Increasingly, agricultural and raw materials producing nations want to process their products to the extent possible for reasons of employment. Here is where real battles over protectionism will continue to build. Farm producers want to sell anywhere and to anyone. Processors want to transform products, *then* export. A good example is the fed beef industry. Cattle feeders want to utilize our cheap feed grains and high technology to produce high-priced beef for export. Also for export are hides and skins, and tallow. The famous "Chicken War" of the early 1960's is illustrative of such conflicting interests.

Pure statistics, however representative, can never answer the more fundamental economic, social, and political questions which revolve around: comparative advantage, self-sufficiency, cheap food, and national security. Yet, Dr. Hjort's data demonstrate the significant changes which have taken place in U.S.

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trade of cotton, soybeans, and many other products. Also he has pointed out the multiplier effects of agricultural exports on the total U.S. economy.

Perhaps the most important question that might be raised about all such data relates to the "gains" and "losses" which result from international trade. Is a continued growth of trade good for all farmers, all sections of the economy, and the U.S. society in general? What might be the economic limits of U.S. exports — and imports? Or should there be limits? Must agriculture "bear the cross" continually for U.S. trade imbalances? Is there an optimum level and mix of farm exports which are superior to all other levels and mixes for national security, for income and employment, and for the general welfare? These are questions which we must work at.

U.S. Export Potential

The material in what I call Part Two is less well organized and more subject to economic and political dispute. The issues might have been more clearly presented if national (domestic) agricultural policies had been kept separate and analyzed distinctly from national agricultural trade policies. In short, I don't think Dr. Hjort has singled out national agricultural policies as the real culprits, the real barriers, that they in fact are to international trade. Agricultural trade policies become secondary to agricultural policies; i.e., trade is, in part, determined politically by what can be negotiated from national production and related farm policies. The market for U.S. farm products depends not only on economic growth but on agricultural policies abroad. For example, Japan, a good market for us, could be a better market with changes in its internal agricultural policies.

Some of Dr. Hjort's treatment in the section, "U.S. Farm Policy in Transition," tends to distort political reality. Agricultural and trade policies have not changed all that dramatically since January 1977. The 1977 farm bill is a continuation of thrusts already underway, with a few specific titles added. The perception of the problem by some might have been new — after political responsibility fell on their shoulders! I do not mean to imply that there were no political differences before and after 1977.

The real changes, however, in U.S. and world agricultural and trade policies have arisen — one could say almost of necessity, as well as by design — out of structural forces already at work. Some changes were already underway in 1970 and 1973 farm legislation, and in other legislative and administrative actions to improve matters for producers and consumers. Many of these actions were taken as a result of demands for change in farm programs which were increasingly costly but which were not solving the so-called *farm problem*. What the farm problem was had been well identified by the Report of the President's National Advisory Commission on Food and Fiber, issued in 1967, and by an internal study commissioned by Secretary Hardin upon his taking office in 1969.

There is another point of view to some of the points outlined by Hjort. For example, didn't the United States always meet its food aid commitments during the 1973-75 price runup; should we imply that food was the principal cause of the inflation; should the 1973-75 livestock fiasco (caused principally by a numbers buildup) be laid at the door of grain exports; and was the U.S. reputation as a dependable supplier so badly tarnished?

Some real problems arise in the sections entitled "U.S. Export Policy" and "Provide Stability." The discussions on stimulating foreign demand, foreign food assistance, and credit arrangements all sound like a creeping reapproachment to a large-scale P.L. 480. Obvious contradictions arise between what is already being done regarding reserves and the statement "we will not be the storehouse for the world." Also, it is wishful thinking under current conditions of U.S. excess supplies to hope for cost sharing from Europeans and Japan. I doubt if either would look with favor on helping us pay for land set-aside program costs.

To end on a positive note, the reserve numbers mentioned in the text appear about right. Some continued work on market development by the USDA is in the public interest. And some long time planning and research on foreign agricultural trade policy is to be applauded. As yet, however, I see far too little of the research.

Agricultural Trade Relations Between the European Community and the United States

Text of a speech delivered for
Finn Olav Gundelach by
Herman De Lange*

The European Economic Community is your biggest farm customer and your biggest competitor:

- Our 260 million people consume the bulk of your agricultural exports.
- Our livestock farmers rely on your cereal and soybean growers for much of their animal feed.

Yet, our farmers and your farmers face each other in many third country markets.

Your agriculture and ours are largely interdependent. Our internal farm policy affects you. Your trading aspirations affect us. It is both right and useful, therefore, that our nine-nation community be represented here today.

Let me begin by emphasizing our interdependence.

We are partners in trade. Last year, the Community bought a sixth of all your exports to give you a \$4 billion trade surplus with us.

We are also partners in farm trade. Last year we bought close to \$7 billion worth of your farm produce — six times as much as we sold to you. Twenty per cent of all our food imports come from the United States and you are our biggest single supplier.

We are partners too in supplying the world with foodstuffs. Your effort in this area is huge — total farm exports of \$24 billion last year. But the Community is developing its exporting role. We have built up to an 8 per cent share of world agricultural exports — though we still are, and are likely to remain, considerable net importers.

The United States and the Community are, then, partners in important ways. We are partners in overall trade, in farm trade, and in supplying the world with

*Herman De Lange, First Secretary. Delegation of the Commission of the European Communities, delivered this speech for Finn Olav Gundelach, Vice President of the Commission of the European Communities.

food. Our consumers and farmers need you, especially for animal feed. But equally you need them. Without their considerable and regular demand backed by hard currency, your farm incomes would be greatly reduced.

But inevitably, these partnerships are spiced with competition. And it should not surprise us if we seem to have conflicting trade objectives.

- You sell us a lot and you want to sell us more. We, on the other hand, are alarmed at the one-sided nature of United States-Community farm trade. We do not want our farm deficit with the United States to get any bigger.
- a You have a predominant position on most third-country markets and you want to make it stronger. Our farmers also aspire to export growth and want to *see* us selling more overseas.

It is my view, and the view of the European Commission, that these apparent conflicts can be resolved — that the United States, The European Community, and other countries can make progress towards realizing their trade aspirations. That is our goal in the current multilateral trade negotiations.

As I see it, we can expect the MTN to resolve these issues in several ways.

- We must agree to run our internal agricultural policies so that we do not pass the whole burden of agricultural adjustment to other countries.
- We must avoid unreasonably erratic price fluctuations on world markets.
- We must work for an expansion of international farm trade by guarding against unnecessary border restrictions.

Let me deal with these points in more detail so that you will be better able to see what lies behind our thinking in these important areas.

Our internal agricultural policy is a key part of our European construction. It has controlled and smoothed revolutionary changes in our community agriculture. Since 1958, for example, half of our agricultural population (8 million people) has moved off farms. Farm size has doubled, output has increased. No longer can our industry be characterized as one where producers eke out a living from farms little bigger than gardens. It is now an industry of profit- and cost-conscious farmers using the latest production techniques.

The smoothness with which this change has taken place has been one of the triumphs of the policy.

Another has been its role in bringing free agricultural trade to our community. It is too easily forgotten that the policy has made it possible to dismantle many quantitative restrictions — while, elsewhere, these crude and arbitrary restrictions often continue to hamper the development of agricultural trade.

In these and other respects our agricultural policy is a success. It is here to stay. The present U.S. Administration understands this.

We are now getting to grips with the problem of market imbalance that has

dogged some sectors of our agricultural industry since the late 1960's. Imbalances have almost always been present in the milk market and now they are serious in the sugar sector. But we are on the way to bringing them under control: we are on the way to ending the waste of resources represented by farm surpluses.

The foundation of our approach is a tough price policy. Last year we increased our farm support prices by an average of 3.9 per cent. This year we have gone a step further — increases have been held back to an average of 2.1 per cent. In weaker currency areas, the rise will be higher but it will still be less than inflation.

At a difficult time for our economies — one of inflation combined with recession — we have sent a clear signal to our farmers. We have told them through their pockets: "You are producing more than consumers at home and abroad can buy."

This has not been easy. Many of our governments wanted to do more for their farming communities. Agreement was only reached after about two weeks of solid, government-to-government negotiation.

And this is of relevance to you in the United States and to the MTN. True, I have been talking about internal policy. But by tackling our internal problems we are doing our share to bring down world farm surpluses. We are making a Community contribution to the world problem.

Equitable solutions to trade problems are only possible if we recognize the sort of contribution the Community is making. We must all hold back our production if world markets are to be balanced and we, in the Community, would be happy to see other countries make the same effort.

You in the United States have your contribution to make though I notice you have recently increased your dairy support prices.

The second part of our internal attack on wasteful surpluses also has repercussions for international trading patterns. We are determined to make our own products attractive on our internal markets so that we consume more of our own output. This will not be done by restrictions at the Community frontier but by adapting our policy to market forces.

Let me quote an example for the milk sector. Not too long ago, the Community owned stocks of almost 1 1/4 million tons of skimmed milk powder. This was surplus to the requirements of the food industry and could not find outlets on the world market. The stocks represented a huge problem.

Now, by adapting internal subsidy schemes, we are well on the way to a solution. More and more of this protein is being used either as liquid or as powder in animal feed and the stocks are already down to 750,000 tons. We have made our own products attractive on our internal market.

This policy does not hamper your present exports of soybean meal. Nor does it exclude growth. What does limit growth is the necessity of trying to hold down our animal production.

This skimmed milk powder story illustrates several important points.

- It illustrates the importance of expanding international trade — because the more we can sell abroad, the less we shall need to feed at home.
- It illustrates the importance of burden-sharing. We feel, for example, that America's close stance to our dairy products has left us to bear more of the burden of international adjustment than is just.
- It illustrates the interdependence of products in trade. If we cannot sell our skimmed milk powder, then we have to use it internally. America's dairy import restrictions look like good news for your dairymen but bad news for your soybean growers, because the possibility of growth for your exports of soybean meal depends on the internal and external possibilities of our animal production.

You will see that we are increasingly adapting our policy to market forces. We are holding down increases in our support prices and we are making our produce more attractive in the market place. This is not easy. We are having to resist calls for greater protection.

These calls have been especially loud from citrus producers in poorer regions of the Community. They have for a long time argued that the policy did nothing to help them develop. Now, we have made a series of proposals that will help them to raise their efficiency and fight for a bigger share of an expanding market.

As I say, this is not what they want. They have asked for the short term gains that would come from greater protection. We have offered the longer term but more lasting gains of greater market strength.

Now we are being asked in the MTN to make concessions for your citrus fruits and similar products. You will understand our difficulties. We cannot give something with one hand and take it away with the other. I will not jeopardize the entire Mediterranean programme.

The third factor we consider important in the MTN concerns price fluctuations. Our agriculture is very open — remember we import about one-third of total produce traded on world markets. Erratic price movements on world markets can lead to sudden rises or falls in our farmers' costs leading to unjustified falls in our farmers' incomes or sudden spurts in productions.

We have made great efforts in this area in the current trade negotiations and now seem to be making some progress on the question of minimum and maximum prices for wheat. There are still problems, though, on the issue of feedgrains. The two must go together.

This question, I repeat is important to us.

Erratic price movements make it impossible to direct and fine-tune our agricultural policy. We do not want to make your grains and soybean meal more expensive — obviously not. But price movements that bring "boom" one month and "bust" the next are disruptive and harmful to our farmers and not in the interest of orderly international trade.

I have dwelt on these points because we believe them to be important. We are convinced that a first step towards satisfactory arrangement for world trade is a

wide understanding of each party's point of view. That's why I've gone into such detail today.

We see that the United States wants to increase its total exports to offset its oil deficit and we see that this will apply to agriculture. We are sympathetic. At the same time, you must recognize our position.

- We are making a major contribution to bringing world markets into balance by controlling our own production. This will steady prices and increase everyone's export earnings.
- We are resisting calls from our farmers for greater protection on a variety of products.
- We are developing our internal markets but we too want to see export markets opened up. We have special interest in the dairy sector.
- We want erratic price fluctuations ironed out because they damage our open farm economy — adversely affecting farmers and disturbing our internal policy.

World trade can be developed but this must be done in a way that spreads the benefits. That way, trade unites nations.

In any other way it is divisive, it has a potential for good or for ill. We can turn trade into an economic battleground. Or we can cooperate and respect each other's interests. We in the European Community choose the latter.

Discussion

Tim Josling*

We are all grateful to Mr. Gundelach for taking the time to prepare a paper for this meeting, even though his schedule of meetings in Brussels prevented him from delivering it in person. Since the paper is such an authoritative statement of the view of the Community on EC-U.S. agricultural trade relations, it would be inappropriate for me to elaborate on this position. My comments will therefore be of two kinds. First, I wish to highlight some of the underlying trade issues affecting EC-U.S. relationships which might otherwise be hidden in the diplomatic phrasing of Mr. Gundelach's paper. I have no wish to open wounds that politicians are attempting to heal, but in a conference of this kind the issues should presumably be faced squarely. Then, I wish to add some remarks of my own on two specific aspects of EC policy which have a potential impact on trade. *

Mr. Gundelach's paper stresses the interdependence of U.S. and EC agriculture. It is true that the domestic policies of each have an impact on the other, and that both have positions of heavy responsibility in the world food economy. But there is one important factor which arises from the farm policies pursued which has prevented this interdependence from leading to mutual understanding over the past two decades. U.S. agriculture is in large part oriented towards world markets, whilst European agriculture has enjoyed a high degree of isolation from these same market forces. This is particularly true in the grain market. Whilst U.S. farmers are made aware of the swings and roundabouts of the international grain trade, EC farmers know that there is an open-ended option of selling grain into intervention, at prices which would seem very attractive to producers in the United States, to be disposed of on world markets by means of equally open-ended export subsidies. So long as this continues, defacto interdependence can coexist with mistrust and policy conflict.

To a certain extent, this is a matter of the difference in policy price levels themselves. If the Community were able to bring CAP prices down to a level more closely related with those which they could reasonably be expected to obtain on world markets, the import levy-intervention-export subsidy system would represent a modest but effective stabilization device, causing occasional consternation to other countries but hardly qualifying as a major source of international tension. U.S. farmers might still envy their European counterparts, but they could not

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argue that longer run and profitable trading outlets were being denied. But such is not the case. The Community is presently tied to a system whereby farmers are guaranteed price rises dictated by internal rather than external factors.

Mr. Gundelach appears to be saying that the outcome of the negotiations on prices for the 1978-79 season represents a turning point, and that farmers have been given a clear signal that their period of isolation is over. This seems to be putting excessive weight on some minor victories that the Commission has had over protectionist pressures in Europe. It is true that CAP prices increases in terms of "units of account" were held to about 2 per cent, but with the recent changes in the monetary equivalents of the unit of account (the so-called "green" currency rates) the policy prices expressed in terms of national currencies will actually rise by nearly 8 per cent. Though regarded by European farmers as niggardly, such price increases are not likely to appear to U.S. agricultural interests as evidence of a determined effort to reduce the high levels of protection provided by the CAP. The reason lies not primarily with the Commission: even if Mr. Gundelach shared the views of the British government, that CAP prices should more closely reflect international market conditions, I cannot at present see any hope for his wishes to be granted by the Agricultural Ministers of Germany, France, and the Benelux countries.

I mentioned that this fundamental conflict of domestic policies and objectives was in part related to policy prices. There is an equally important aspect of this conflict which relates to the method of support. The CAP system of market organization is designed specifically to remove the impact on internal prices of variations in both domestic output and world market availabilities. It follows that the Community is in effect "exporting" the impact of its own production instability, and, more importantly, declining to shoulder any significant part of the burden of world market instability. It has been left to other countries to absorb the major variations in grain output and demand. The remark of Mr. Gundelach that countries should not pass adjustment burdens onto others must imply that he has in mind some dramatic shift in the nature of the CAP. No such proposals have emerged from Brussels.

Let me take this point one stage further in the context of the negotiations for a new wheat agreement. The essence of such an agreement to stabilize prices must be that individual countries take actions with respect initially to the management of stocks and then, depending on the nature of the market imbalance, by altering domestic supplies. In a weak market, under present CAP operations, export subsidies would be increased so as to avoid pressure on domestic markets. Under a wheat agreement involving coordinated stock and supply management, the EC would have to *reduce* export subsidies, build up stocks, and eventually allow some degree of price reduction in domestic markets in order to stimulate consumption and curtail production. I don't question the sincerity of the Commission in favoring such an agreement, but I find it more difficult to detect any willingness on

the part of the Agricultural Ministers of the EC to contemplate the consequences. The evidence from the sugar sector is not encouraging. This is the one sector of European agriculture where quantitative controls are a part of the domestic policy — and yet the Community has been unable so far to sign the International Sugar Agreement because the domestic implications of the discipline of export entitlements were too strong to stomach. There really are no easy options on the question of world price stability: international cooperation and burden-sharing rests entirely on the willingness of governments to make the appropriate domestic responses.

The other major issue regarding European trade policy raised in Mr. Gundelach's paper is that of agricultural exports from the Community. First let me say that I find it disappointing to hear the Commissioner putting such emphasis on the trade imbalance in agricultural goods with the United States. Bilateral trade balances are a weak guide to policy at the best of times in a world of convertible currencies. Concern with bilateral balance by commodity group gets close to denying the advantages of trade altogether. It would have been more appropriate, in my opinion, to have pointed to the need to expand *nonagricultural* exports from Europe, to the United States and elsewhere, in order to allow agricultural and other imports to be financed. This brings us back to the MTN. The problem facing European trade negotiators at present, as for the past 15 years, lies in the fact that progress in the dismantling of industrial trade barriers within the GATT has been seriously hampered by the apparent inability of those responsible for the making of agricultural policy in the EC to formulate domestic programs in a way which is consistent with these broader Community trade objectives.

I can only interpret the emphasis on agricultural exports to stem, not from a strong desire on the part of European farmers to get into such markets, but from a concern on the part of the Commission for some help in alleviating the mounting financial cost of the CAP, particularly in dairy products. Whilst I would not argue against a relaxation of U.S. dairy import policies — for in the case of dairy products the U.S. market is as far out-of-touch with world conditions as that in Europe — the real gains to be had in the improvement of world dairy trade come from lowering protection in a number of countries, the United States, EC, and Japan included, to allow greater access from exporters such as Australia and New Zealand. A few more tons of subsidized butter and cheese from Europe to the United States is as likely to perpetuate the underlying problems as to solve them.

Next, I would like to comment on two specific aspects of European policy which seem to me to have important implications for trade. The first has to do with the question of the relative price levels among European countries. As everyone engaged in trade with Europe knows, the Common Agricultural Policy hides some remarkably uncommon features. Prices of agricultural commodities in Germany have in recent months been 40 per cent above those for comparable goods in the United Kingdom, with prices in other member states somewhere in between. This

has arisen from the system of special exchange rates used to translate "common" prices into national currencies, originally devised to smooth out effects of currency fluctuations on administered farm price levels. The price differences which have emerged under this system during the period of floating rates appear not entirely by chance to be broadly consistent with divergent national views on the appropriate levels of support prices. Governments have enjoyed a flexibility in pricing policies through their defacto control of "green" rates of exchange that they never envisaged in the earlier phases of the CAP. United Kingdom support prices for most commodities, for example, are probably little higher than they would have been if Britain had retained a national agricultural policy. Access to that market is not so free as in the days before enlargement of the Community, but neither is it so constrained as might be thought by cursory examination of "common" EC price levels, or as would be implied by a precipitate dismantling of the "green-rate" system.

The importance of this system for the future of U.S.-EC trade lies in the way in which an eventual return to common prices might be achieved. If one takes the view that it is politically impossible for price levels in the strong-currency countries, notably Germany, to be reduced, uniform prices will imply a progressive denial of access to the markets of the weak-currency countries. European agriculture would be, in effect, riding on the coattails of the deutsche mark. Such was never the intention of the architects of the CAP. I need not elaborate on the other alternatives, but a way must be found, in European as well as other interests, to prevent an inadvertent upward drift in price levels which would leave Community agriculture on an even higher price and cost plateau relative to other major trading nations.

The second aspect of policy which is emerging as a major issue both within Europe and outside is that of further enlargement to include Greece, Spain, and Portugal. In political terms, such an expansion seems both logical and desirable. The implications for trade are more contentious. The main difficulty, with respect to agricultural products, is how to satisfy the several demands of new entrants for expanded markets, of present members for adequate protection for existing production patterns, and of taxpayers and finance ministers for a limit to the budget cost of enlargement. The solution is painfully obvious: outside suppliers, whether in the United States, Latin America, North Africa, or elsewhere, will have to absorb much of the burden by restricting exports to the Community of 12. The number of farmers sheltered by the CAP will expand by about 50 per cent, many of them genuinely in need of constructive programs for structural adaptation and market improvement. Despite warnings from the Commission about the dangers of excessive reliance on artificial market support for the products of the Mediterranean regions, the logic of the CAP is that markets be created at the expense of foreign suppliers. Unless and until this whole approach to farm policy — in grains and livestock as well as in olive oil, wine, and citrus fruit — is radically changed, the

CAP will continue to be a source of tension within the Community and embarrassment in external relations.

I apologize for ending on a pessimistic note, but I do not believe that one can hide the very real problems faced by the EC in the area of agricultural trade. Whilst one can understand and sympathize with these problems, the real task is to devise imaginative solutions. I hope that considerations of Mr. Gundelach's frank and clear paper can proceed in that constructive direction.

Potential Role of Humanitarian Efforts

D. Gale Johnson*

As I prepared these remarks I found myself reflecting upon the implications of an idea that is common to all of the major religions of the world and to most ethical positions, namely that it is desirable to give; it is, in effect, better to give than to receive. In the King James translation of the Bible, it is written: "It is more blessed to give than to receive." A fairly modern translation places giving in an equally selfish framework: "It makes one happier to give than to be given to." There is some implication here that the one who receives may not be happy at all, though this does not necessarily follow since both the giver and the receiver could be made happier than each was before.

I have long remembered a wise statement attributed to some ancient Chinese philosopher — I have forgotten the source — who was supposed to have said: "I don't know why he doesn't like me; I never did anything for him."

To me these are troublesome thoughts. Admittedly it makes us feel good, either individually or collectively, when we do something that we believe helps others. But all too often we fail to consider how our act of charity, however fine our intentions, may make the recipient feel or what effects there may be upon the recipient's circumstances.

More than a century ago, John Stuart Mill wrote as follows about these issues:¹

On the other hand, in all cases of helping, there are two sets of consequences to be considered; The consequences of the assistance itself, and the consequences of relying on the assistance. The former are generally beneficial, but the latter, for the most part, injurious; so much so. in many cases, as greatly to outweigh the value of the benefit. And this is never more likely to happen than in the very cases where the need of help is the most intense. There are few things for which it is

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more mischievous that people should rely on the **habitual** aid of others, than for the means of subsistence, and unhappily there is no lesson which they more easily learn. . . .

Energy and self-dependence are, however, liable to be impaired by the absence of help, as well as by its excess. It is even more fatal to exertion to have no hope of succeeding by it, than to be assured of succeeding without it. When the condition of any one is so disastrous that his energies are paralyzed by discouragement, assistance is a tonic, not a sedative: it braces instead of deadening the active faculties: always provided that the assistance is not such as to dispense with self-help, by substituting itself for the person's own labour, skill, and prudence, but is limited to affording him a better hope of attaining success by these legitimate means. . . .

In so far as the subject admits of any general doctrine or maxim, it would appear to be this — that if assistance is given in such a manner that the condition of the person helped is as desirable as that of the person who succeeds in doing the same thing without help, the assistance, if capable of being previously calculated on, is mischievous: but if, while available to everybody, it leaves to every one a strong motive to do without it if he can, it is then for the most part beneficial. . . . If the condition of a person receiving relief is made as eligible as that of the labourer who supports himself by his own exertions, the system strikes at the root of all individual industry and self-government; and, if fully acted up to, would require as its supplement an organized system of compulsion for governing and setting to work like cattle those who had been removed from the influence of the motives that act on human beings. But if, consistently with guaranteeing all persons against absolute want, the condition of those who are supported by legal charity can be kept considerably less desirable than the condition of those who find support for themselves, none but beneficial consequences can arise from a law which renders it impossible for any person, except by his own choice, to die from insufficiency of food.

While Mill addressed himself to the problems of charity or philanthropy within a society, what he has to say is equally relevant to transfers from one society to another, from one nation to another, or from international agencies to a nation. If we have learned nothing else from our efforts to aid other nations during the past three decades, it is that it is exceedingly difficult to be a good and effective donor. Further, we have found few new friends and on occasion have alienated old ones. Except for the Marshall Plan, where we were dealing with peoples whose culture and society we understood and respected, it cannot be said that we have pleased either ourselves or the recipients of our good intentions most of the time.

It is, I fear, fairly obvious from these introductory remarks that I believe that humanitarian efforts can have only a limited role in improving the nutrition of the world's poorer people. Consequently, such efforts will be of only minor significance in linking the supply and demand of agricultural markets for the world. In saying this, I do not mean that humanitarian efforts are of no value and that thus there is no place for well conceived efforts to assist others less fortunate than we. I hope that I can make a small number of valid points — that giving must be modest,

well defined in its objectives, and primarily for the benefit of the recipient rather than a seemingly simple solution for one or more of the donor's problems.

Some Misconceptions About the International Distribution of Food

While less common today than it was a few years ago, one serious misconception about the distribution of food among the peoples of the world is that if the available supply of food were more equitably distributed there would be food enough for all. The arithmetic behind this conclusion is simple enough — take the total number of calories contained in the grain produced in the current year and divide by the number of people in the world and the result is easily 3,000 calories per day for somewhat more than 4 billion people.² And there would remain at least 1,000 calories per day from other food sources to be disposed of.

A similar and related misconception is that if everyone in the world had the American diet, current world food production would be adequate for only "x" number of people. I haven't checked to see what the various estimates of "x" are, but I suppose that it would be about a billion persons.

It is hardly necessary for this audience to stress the fallacy in the equal distribution of current food output among the world's people. There is, after all, a link between reward and output. No one has yet, so far as I know, provided a blueprint for maintaining the current rate of world grain production while requiring the United States, Canada, and Australia to give or transfer to others about 75 per cent of their grain, net of requirements for seed.

Another misconception is that the affluent of the world reduce the available food supply of the poor. This has been argued both as a general proposition and during times of difficulty, such as 1973-75. This is clearly a wrong headed view. If anything, the contrary has been true. It has been the affluence of the United States that has permitted such a large investment in agricultural research, some of whose benefits have been realized by others. It has been affluence that has made possible the enormous productivity of American (and Canadian and Australian) agriculture and has permitted a volume of food exports that has provided a significant part of the food supply of hundreds of millions of the poorer people of the world.

And it was the affluence of America that made it possible to reduce grain use in 1974-75 by more than 20 per cent below the prior year's level despite a reduction in grain production of 33 million tons or 14 per cent. The fact that a large percentage of domestic use of grain is as livestock feed made such an adjustment possible. If we had fed little grain to livestock, our grain exports would have fallen and tens of millions of people would have died.³

Those who urge that Americans should feed less grain to livestock should contemplate the current demand and supply situation for grain in this country and in international markets. One important factor in the recent low prices of grain is due to

the slow recovery of domestic grain use from the reduction made in 1974-75. Had U.S. grain use been at the same level the past three years as it was in 1973-74, market prices would have been higher and we would not now be retiring land from cultivation this year. In any case, it is not obvious that recent low grain prices — the lowest since the Great Depression in real terms — have benefited the poor people of the world. In saying this I am not advocating a return to the grain prices of 1973 and 1974, but merely noting that the world food system is complex, indeed.

Appropriate Objectives of Humanitarian Efforts

During the past three decades there has been an unprecedented transfer of food from high income countries to low income countries, with the United States being the major supplier of such food transfers. While there has been substantial food aid in response to particular emergencies in prior times, the recent large transfers are unique in terms of their continuity and magnitude. It is not my intention to review the effects of these transfers upon the recipient countries, but I will very briefly review the objectives that appear to have guided our food aid programs. If we ignore the food aid provided during World War II and the reconstruction period that followed, our food transfers have been in pursuit of five main objectives. The relative weight of these objectives has varied over time and from place to place, but each has been important. They have been:

1. To encourage the disposal of agricultural commodities that could not be exported through normal trade channels at the prevailing market prices — surplus disposal;
2. To encourage economic development in other countries;
3. To promote collectivestrength and to foster in other ways the foreign policy of the United States;
4. To improve the nutrition of people in low income countries; and
5. To provide food in response to emergency situations, such as natural catastrophes (floods, tornadoes, earthquakes) or food production shortfalls due to natural factors.

These objectives, especially the fourth and fifth, were implicit rather than explicit in the original version of P.L. 480, whose title was "The Agricultural Trade Development and Assistance Act of 1954." In the Food for Peace Act of 1966 these two objectives were made more explicit since one of the purposes of the act was "to use the abundant agricultural productivity of the United States to combat hunger and malnutrition. . . ." In the 1966 amendments to the objectives of the act it was stated that food aid should be allocated "with particular emphasis on assistance to those countries that are determined to improve their own agricultural production. . . ." The Food for Peace Act of 1966 not only authorized the President to consider the efforts of friendly countries to increase their own agricul-

tion but also the strength of their efforts to meet their problems of population growth in exercising the authority provided in the legislation.

Subsequent changes in the statement of purposes, particularly the new directions for foreign economic assistance passed by Congress in 1973, were largely directed to minimizing the use of food aid for political purposes by requiring that a large fraction of Title I shipments go to a group of the poorest countries. However, sufficient loopholes were left so that a significant part of the food aid, especially that going to the Middle East, is in response to national political objectives.

The above recital of objectives is intended to reveal the mixed motives underlying our philanthropy. Perhaps one could say that the drafters of the original objectives of P.L. 480 were more honest in their statement of intentions than most of us have been since then. They were quite forthright in their intentions — to dispose of farm products that were a burden to the domestic economy and to expand the exports of our farm products. Humanitarian impulses were clearly secondary, if present at all. We wanted to do good, but it was primarily for our own selfish purposes. I don't say that very critically, if at all. It can hardly be said that as we have become more sophisticated in our statement of objectives that our performance as a responsible donor has significantly improved. If we have done less harm in recent than in prior years it is primarily because we have had less than we wanted to dispose of free or at highly subsidized prices.

I see little evidence in either our objectives or our actions that we have clearly defined the purposes that can be achieved by food aid or other forms of aid related to food production and distribution. The primary cause of malnutrition, including inadequate calorie consumption, is poverty. Most of the people of the world who have inadequate diets are very poor people and most of the very poor people of the world live in rural areas. The World Bank has estimated that 80 per cent of the poorest people in the developing world — those that might be described as living in poverty — live in rural areas. Too many of us think of the teeming population of Calcutta or the hundreds of thousands who live in the favelas of South America as the largest component of the underfed population of the world. But these people, as unfortunate as they are, represent only a minor fraction of the total who are similarly victims of poverty.

I conclude that humanitarian efforts or aid will make a positive contribution to an improvement of the circumstances of the world's poorest people only if:

1. It meets directly and efficiently a quite specific human or social need, such as the food needs of children and mothers, or helps to create community amenities such as a clean water supply, improved sanitation, or more adequate roads.
2. It increases the degree of security of food supply in a way that does not have significant disincentive effects upon local producers.
3. It results in an increase in the productive capacities and incomes of poor people, through increasing agricultural output or any other activity that results in higher incomes.

I have deliberately not included among the objectives the use of aid to expand the world's demand for food in order to absorb the available supply of food at prices deemed reasonable by producers, especially the producers in the major food exporting countries. I do not believe that the use of aid primarily for the benefit of those who give is an appropriate end for humanitarian efforts unless it is evident that there is a substantial gain to the recipients. In other words, the material benefits to the granting countries should be given a secondary rather than a primary role. Put another way, food or any other form of aid to low income countries should not serve as an excuse for our failures to meet our adjustment problems.

The Limits of Food Aid

In emphasizing the limits of food aid I am not implying that there are no useful objectives that can be met by such aid. I have just outlined three such objectives. These three objectives, however, are likely to require a smaller flow of food aid than we have seen in the past or may see again in the future if international grain and other staple food prices remain at their recent levels.

When food aid is viewed primarily for the benefit of the givers, as appears to have been the case both in the past and in current thinking, there are some obvious undesirable consequences. Such aid contributes little to the food security of the developing countries since the amount of such aid is determined to a considerable degree by the interest of those who give rather than by the desirable effects upon the recipients. We need only to briefly review the pattern of world aid in grains from 1960 to date. During the 1960's the annual aid transfer of grains was about 14 million metric tons; of this the United States supplied more than 90 per cent. In 1970-71 and 1971-72 the annual transfer was approximately 12 million tons. In 1972-73 and 1973-74 it could hardly be said that the circumstances of the recipient countries changed in a favorable direction, yet aid in the form of grain declined to 10 million tons and then to less than 6 million. Since 1973-74 the average level has been about 8 million tons, but it seems quite clear that there is a definite upward trend with 1977-78 shipments forecast at almost 9 million tons. Recent international discussions have indicated that the donor countries are considering further increases — a not unexpected development given the international prices of grain.

I should note that had food aid in the form of grain been at the same level in 1973-74 and 1974-75 as in the first two years of the decade, international grain prices during those two years would have been substantially higher than they were. This would have been true unless grain received as food aid were a perfect substitute for commercial trade in grain — a ton of food aid displaces a ton of commercial imports. While there is a substantial substitution of food aid for commercial trade, no one has claimed that aid is fully offset by a decline in commercial imports. Thus the decline in food aid benefited low income countries that were net grain importers and received little or no food aid in any case.

I do not know what volume of food aid can be effectively used to meet specific human or social needs. School lunch and other programs for children and mothers are probably more limited by the capacities and facilities for effective administration than by the available supply of food from aid agencies, both public and private. And there is certainly a role for food aid as one component of rural development projects, though the problems of transport and direct distribution to rural communities limits the amount of such aid.

Except for a modest contribution to rural development projects, I do not believe that food aid has a significant role in increasing the productive capacities and incomes of poor rural people. One could imagine projects to improve irrigation and water control that resulted in disruption of food production for a year or two; in such case food could be supplied as aid without any disincentive effect upon local production and the value of the aid would be more or less equivalent to its money value. But other forms of aid than food are required if aid is to be effective in increasing the productive capacities and incomes of poor rural people.

But I do believe that food aid can make a substantial contribution to food security for the poorer people of the world. Food aid can be used to minimize the adverse effects of national production shortfalls in the developing countries. A large share of the human suffering caused by production variability could be eliminated. I would go so far as to say that it is now possible to prevent nearly all deaths and most of the hardships due to food production shortfalls. The next section of this paper will be devoted to the presentation of a proposal that could make the world a more tolerable place for its poor people.

Improving Food Security

Food security for all developing countries could be significantly improved by instituting a grain insurance program. The proposal for a grain insurance program is a simple one. It is that the United States, either alone or in cooperation with other industrial countries, guarantee to each developing country that in any year in which grain production declines by more than a given percentage from trend level production the shortfall in excess of that amount would be supplied. This would permit each developing country to achieve a high degree of stability in its domestic supply of grain and such stability could be achieved at a relatively low cost to the donor nations.

If the developing countries were willing and able to adopt a modest storage program of their own, year-to-year variability in grain supplies could be held to within three or four per cent of trend consumption. Thus a substantial degree of internal price stability could be achieved at low cost for each developing country.

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than a given percentage below trend production that the shortfall in excess of that amount would be supplied. This would permit each developing country to achieve a high degree of stability in its domestic supply of grain and such stability could be achieved at a relatively low cost to the donor nations. If the developing nations were willing and able to adopt a modest storage program of their own, year-to-year variability in grain supplies could be held to levels within three or four per cent of trend production. Thus a substantial degree of internal price stability could be achieved at low cost for each developing country.

The selection of percentage shortfall from trend production that would trigger the transfer of grain should reflect two considerations — the incentive for holding reserves in the developing countries and the effect of the insurance payments on the output behavior of the producers in those countries. If the percentage is too low, say between 1 and 2 per cent, there would be no economic incentive for holding reserves in the developing countries and the magnitude of the grain transfers would be large enough to significantly reduce the average expected return to local producers and thus lower the rate of growth of domestic grain production. By a process of trial and error, I have concluded that the most appropriate criterion would be 6 per cent — all production shortfalls in excess of 6 per cent would be met.⁴

The primary objective of the proposal is to assist the developing countries to hold year-to-year variations in grain consumption to a reasonable or acceptable level. In my opinion, this is the most meaningful definition of food security. The proposal should constitute the primary form of food aid provided by the countries that participate in the provision of the grain insurance. If nothing else, I believe that the insurance feature of the proposal constitutes the most reasonable rationale for food aid to the developing countries. The proposal provides a solution to an important problem confronting many developing countries — variability of food availability at times so extreme that significant hardship results. I know of no similarly important objective that has been met by most of the food aid that has been distributed over the past two decades. There have been times, such as the large food aid shipments to South Asia in the mid-1960's, that P.L. 480 was used to offset large production shortfalls.

The proposal is not put forward as a solution to the long run objective of expanding per capita food production and consumption in the developing countries. Neither this proposal nor any other form of food aid can make a significant contribution to the expansion of food production. But I am confident that the insurance proposal will not have significant negative effects upon the growth of food production and the same cannot be said about other methods of distributing food aid.

Table 1 presents estimates of the annual payments that would have been made under the insurance program for 1955 through 1973. The countries included in the estimates are the developing countries that produce more than a million tons of

Table 1
INSURANCE PAYMENTS TO DEVELOPING COUNTRIES
FOR DIFFERENT PROGRAMS,
1955 - 73
(Million Metric Tons)

Year	6 Per Cent	5 Per Cent	4 Per Cent
1955	2.2	2.4	2.8
1956	1.0	1.2	1.6
1957	4.5	5.8	7.3
1958	3.0	3.6	4.4
1959	2.8	3.1	3.4
1960	3.3	3.7	4.1
1961	2.9	3.2	3.6
1962	0.1	0.2	0.3
1963	2.1	2.4	2.7
1964	1.0	1.1	1.3
1965	8.1	9.3	10.5
1966	14.8	16.3	18.1
1967	2.2	2.5	2.8
1968	2.2	2.3	2.5
1969	0.6	0.9	1.2
1970	1.2	1.5	1.9
1971	3.6	4.4	4.9
1972	7.9	8.7	10.3
1973	13.4	14.5	15.7
Total	76.9	87.1	99.4

grain annually. Developing countries are defined to include all the countries of Latin America, Africa, and Asia excluding Japan, South Africa, Argentina, China, North Korea, and North Vietnam.⁵ The limitation of the analysis to countries producing more than a million tons of grain was done to limit data collection and processing and has little effect on the results. Some countries, such as Iran and Chile, are included that no longer merit the classification of developing countries, if that concept is synonymous with low income countries.

The average annual payment for the 19-year period would have been 4.0 million tons if the insurance payment covered all shortfalls in excess of 6 per cent for each developing country producing more than one million tons. The largest payments would have been 14.8 million tons in 1966 and 13.4 million tons in 1973. The average annual payments under 5 per cent and 4 per cent programs would have been approximately 13 per cent and 30 per cent larger, respectively. It would be possible, of course, to use different criteria for different countries, perhaps based on the level of per capita incomes.

The grain insurance proposal requires reasonably accurate data on annual grain production — for the current year and for enough prior years to permit the calculation of the trend level of production for the current year. The proposal does not require data on stocks held in the recipient countries.

The accuracy of data on grain production in many developing countries leaves something to be desired, to put it mildly. The existence of the insurance program could provide an incentive to a government to minimize its estimates of grain production in a given year in order to increase the grain actually transferred. Over time this practice would be self defeating since estimates of trend production for future years would be affected by such underestimates. However, since many governments may have a brief expected life, this self correcting feature may not be of much value in some cases. It might be necessary for the insurance agency to have the right to obtain grain production estimates from an organization that was independent of both the developing country and the countries providing the grain. It should be noted that for most countries there will be time within any crop year to adjust and revise production estimates. The insurance payments would normally be spread out over the crop year and in most cases would not be required in the months immediately following the harvest as long as it was known that the shipments were to be forthcoming.

It should be recognized that there are populations in developing countries that rely on food products other than grains for a significant part of their caloric intake. The grain insurance proposal could be adapted to these circumstances and probably should be. It would be possible to translate manioc and potato production, for example, into grain equivalents and include such products in the projection data. Unfortunately, the production data for such products are less reliable than for grains. In addition, some recognition should be given to the small populations that depend upon livestock products for a major source of calories. The malnutrition and deaths that occurred in the Sahel were due primarily to the devastation of the livestock herds and not to a reduction in grain production.

If it were not for the existence of civil strifes and wars, I believe it is now possible to essentially eliminate all deaths due to the direct effects of food production variability. If achieved this would be a remarkable accomplishment, one that could not have been imagined as recently as the beginning of this century. The objective cannot be reached solely through the efforts of the United States and the other high income countries. It requires the cooperation of the governments of the developing countries and, particularly, their willingness to participate in early warning efforts of actual or possible crop failures. While communication difficulties can now be overcome at modest cost, there are still some areas of the world where transport is slow and costly. Where transport facilities are limited it is essential, if hardship due to weather hazards is to be minimized, that early warning be obtained of pending difficulties.

My statement that it is now possible to prevent nearly all deaths and most of the

hardships now caused by production shortfalls assumes that governments will use part of the insurance payments to directly benefit agricultural producers whose output is adversely affected. Unless this is done, limiting price increases in the national market may be of little benefit to many food producers. Further, food production shortfalls can be very large in limited areas of a country and hardship — perhaps even starvation — could result from income loss. However, if the area adversely affected is relatively small the probability is quite high that the population will make sufficient adjustments to prevent **starvation**.⁶

I want to state once again that the grain insurance proposal is not intended as a panacea or solution for the long run problems of food insufficiency. The proposal would assist in minimizing hardship from fluctuations in food production in the low income countries. It is important that the progress the world has made in this century in reducing famine be continued. The food insurance proposal and improvements in communication and transportation would contribute to that end.

My final comment is that the grain insurance proposal is inferior to a liberalization of trade in agricultural products as a means to achieve world food security. Trade liberalization would not only contribute to stability of prices and supplies of food but would also increase the per capita real incomes of the low income countries. The most reliable means for reducing food insufficiency among poor people is to increase their incomes.

Would grain reserves be required to augment or support the grain insurance proposal? In a world in which governments interfered little or not at all with market prices the answer would be that a special or separate reserve would not be required since the anticipated effect of the insurance program upon the demand for grain would be fully reflected in the storage decisions made by private agencies. However, we do not live in a world in which governments interfere little or at all with market prices. We live in a world in which the prices of most agricultural products are either actually or potentially determined by political decisions. Consequently if the insurance program had been in operation in 1973 with the expectation that the amount of grain required to meet the total commitment of approximately 13 million tons would be purchased in the market, the market price increase required to provide the grain would probably have been so large as to result in failure to deliver the full amount.

Consequently it would be desirable to have a separate grain reserve of sufficient size to meet a substantial fraction of the insurance payments in excess of the average annual level of such payments. Unfortunately this would add to the cost of the insurance proposal, but it may be required if the commitments of the donor countries are to be believed.

Alternative Proposals for Food Security

The grain insurance proposal described above has been criticized because it deals with only one of two aspects of food security for developing countries. The

proposal responds only, it has been said, to the effects of food production shortfalls. It does not meet the difficulties that face developing countries that are food importers due to an increase in international food grain prices.⁷ Shlomo Reutlinger of the World Bank has suggested that a greater degree of security would be provided by insuring the food import bill in such a way that annual fluctuations in a developing countries food import bill would be held to a predetermined level. Variations in the food import bill are due to variations in domestic production and variations in international market prices.⁸

While Reutlinger notes that stabilizing the food import bill may not provide a definite level of food security due to variations in export earnings, he fails to pursue the implications of this observation.⁹ A proposal similar to Reutlinger's has been presented, on a tentative basis, by staff members of the International Food Policy Research Institute and they have also failed to consider the correlation between the values of agricultural exports and agricultural imports.

Table 2 presents data indicating that under the rather extreme price variations occurring in 1973-75 that developing countries increased their export surplus from agricultural products. In other words, the value of agricultural exports increased more between 1969-71 and 1973-75 than did the value of agricultural imports. The increase was not a minor one since the surplus for 31 developing countries with populations of 7 million (excluding all OPEC members except Indonesia) or more increased from an annual average of \$7.3 billion for 1969-71 to \$11.6 billion — an increase of \$4.3 billion.

The favorable change in the net export surplus occurred even though the volume of agricultural imports for all market developing economies increased significantly more than did the volume of their agricultural exports. Trade indexes calculated by the Food and Agriculture Organization show an increase in export volume of agricultural products between 1969-71 and 1973-75 of 5 per cent while agricultural import volume increased by 26 per cent. For food products alone export volume increased by 7 per cent and import volume by 28 per cent.¹⁰ Thus the improvement in net export surplus of agricultural products was not achieved by expanding exports by more than imports; in fact, the contrary occurred.

It is true that the developing countries suffered some deterioration in their terms of trade for agricultural products. Comparing the same two periods, the import unit value increased by 106 per cent while the export unit value increased by 90 per cent. But due to the fact that the developing market economies have a large net agricultural surplus, the net export surplus increased substantially despite the modest deterioration in the terms of trade. Had the developing countries not increased their quantity of imports of agricultural products by so much more than their agricultural exports increased, the increase in net export surplus would have been substantially greater.

More work needs to be done to determine if the alternative for food security put forward by Reutlinger is in any way superior to the grain insurance proposal. But a

Table 2

**VALUE OF AGRICULTURAL EXPORTS AND
IMPORTS, FOR DEVELOPING
MARKET ECONOMIES, ANNUAL AVERAGES,
1969 - 71 AND 1973 - 75**

Country*	Value of Exports, Annual Average		Value of Imports, Annual Average		Net Change in Annual Exports Minus Imports†
	1969-71	1973-75	1969-71	1973-75	
	(Millions of Dollars)				
Ethiopia	111	226	15	18	112
Bangladesh	198	136	228	517	-351
Burma	90	114	13	13	24
Pakistan	236	361	135	394	-134
India	644	1,367	677	1,234	166
Sri Lanka	313	398	160	306	-61
Tanzania	191	287	30	122	4
Zaire	104	153	52	166	-65
Indonesia	470	864	235	628	1
Madagascar	108	178	26	48	48
Kenya	162	310	57	84	121
Uganda	213	281	24	26	66
Cameroon	159	297	28	59	107
Sudan	293	427	59	148	45
Egypt‡	526	808	245	904	-377
Mozambique	124	198	36	48	62
Thailand	520	1,385	95	178	782
Philippines	384	1,207	160	311	672
Gham	264	463	66	116	149
Morocco	230	373	159	572	-270
Ivory Coast	323	670	91	182	256
Subtotal‡	(5,663)	(10,503)	(2,591)	(6,074)	(1,357)
Columbia	534	962	86	172	342
Korea	77	273	469	1,163	-498
Syria	143	219	108	289	-105
Malaysia	708	1,566	244	573	529
Chile	37	73	222	493	-235
Peru	164	304	133	267	6
Turkey	480	945	91	311	245
Brazil	1,897	4,641	309	908	2,145
Mexico	721	977	178	861	-427
Argentina	1,443	2,514	130	235	966
Subtotals	(6,204)	(12,474)	(1,970)	(5,272)	(2,968)
Total	11,867	22,977	4,561	11,346	4,310

Source: Food and Agriculture Organization, **Trade Year Book**, 1974 and 1975

*Countries in a d n of estimated 1975 per capita national income, ranked from lowest to highest.

†This column shows the change in the net balance of agricultural trade (value of exports minus value of imports) between 1969-71 and 1973-75.

‡Subtotal is for countries with per capita incomes of less than \$500.

§Subtotal is for developing countries with per capita incomes \$500 or more

cursory examination of one period of time in which there were sharp increases in international prices of food and other agricultural products indicates that insuring the food import bill of developing countries was not required to permit the maintenance of food imports by them. If the correlations between import and export prices of food and agricultural commodities important to the developing economies are substantial, then it will be primarily variations in domestic production that will have an adverse effect upon food supplies available in the developing countries. It may well be that it is not when international food prices are high that there will be an adverse effect upon the food imports of developing countries but rather when international food prices are low since it is when prices are low that the developing countries may have difficulty maintaining the volume of their exports.

Concluding Comments

I fear that I have strayed rather substantially from the topic I agreed to discuss. I have put rather more emphasis upon the limitations of humanitarian efforts and upon defining more appropriate objectives than I have in discussing how world food supply and demand could be linked by humanitarian efforts.

I wish we knew better how we could help others. I have argued that there may be a way in which we could contribute to food security for the developing countries, namely through the grain insurance proposal. It seems obvious to me — and I hope to others — that when the primary basis for our aid is to seek a solution for one of our own problems, we are likely to do more harm than good.

Humanitarian efforts should not substitute for changes in policies by the industrial countries that will make it easier for the developing countries to make the most effective use of their own resources through international trade. I have not emphasized this point in my remarks, but it is too important to ignore it entirely.

It is not easy to be charitable in a constructive manner. This does not mean that we should not try to help others, but it does mean that much thought and reflection is required before we embark upon such efforts.

Notes

1/John Stuart Mill, *Principles of Political Economy* (London: Longmans, Green, and Co., 1920), pp. 967-68

2/In 1977 world grain production was 1.3 billion metric tons, with rice included as milled rice. It was assumed that 15 per cent of the grain is required for seed or is lost in added transportation and that milling rates for all grains average 85 per cent.

3/D Gale Johnson, *World Food Problems and Prospects* (Washington: American Enterprise Institute, 1975), p. 42

4/I have called the proposal an Insurance program. An Insurance program usually implies the payment of a premium. Elsewhere I have briefly discussed the possibilities of charging premiums, at least for some of the higher income developing countries. See "Increased Stability of Grain Supplies in Developing Countries: Optimal Carryovers and Insurance," Jagdish Bhagwati, ed., *The New International Economic Order: The North-South Debate* (Cambridge: MIT Press, 1977), p. 258

5/China has been excluded only because available grain product~ondata seldom indicate significant variations of annual production It is not clear whether this is an artifact of the data or if the large size of China results in only minor total grain production variability

6/ I especially commend a remarkable article by Morris David Morris, "What is Famine?" Economic and Political Weekly, Vol. 9, No. 44 (November 2, 1974), pp. 1855-64 He provides an excellent analysis of the means used by Indian farmers to adjust to famine conditions, especially in areas subject to a high probability of drought. These range from choice of crops, storage of water, accumulation of gold and silver (often in the form of jewelry), to migration. Morris quite rightly points out that great care must be exercised in designing relief efforts for areas subject to periodic rain deficiency in order that the local mechanisms designed to preserve life and activity will not be destroyed

7/ "In a recent article Professor D Gale Johnson made a proposal to achieve greater stability of grain supplies in developing countries through an internationally underwritten insurance scheme The proposal calls for the United States and other industrial countries to assure developing countries that any shortfall in grain product~onlarger than a given percentage of their trend level of production would be made available. The Johnson proposal is in our view in the right direction but does not go far enough." The author then notes that food consumption in a developing country can fall below a given level due to a poor harvest and/or a rise in international food grain prices. (Shlomo Reutlinger, "Food Insecurity Magnitude and Remedies," World Bank. July 19, 1977, pp. 5-6.)

8/ *Ibid.*, pp 6-7.

9/ *Ibid.*, p. 7.

10/ Food and Agriculture Organizations, Trade Yearbook, 1975, pp 3-6. The value and volume data are for all market developing economies and are thus not directly comparable to the data presented in Table 2. However, the changes in total values of agricultural imports and exports for all developing market economies and the 31 included in Table 2 between the two periods are very close. For all market developing countries the value of agricultural exports increased by 94 per cent; for the 31 countries, 93 per cent. The increase in the value of agricultural imports was slightly greater for all market developing countries than for the 31 countries — 156 per cent versus 149 per cent

Discussion

Don Paarlberg*

Typically, economists are baffled when they try to understand humanitarian efforts. The reason is that economists assume individuals to have selfish rather than charitable motives. How do you understand or explain motives that are assumed not to exist? It is unfortunate that economists are without the tools for explaining so much of the world's activity.

Prof. Johnson has a well-chosen quotation from John Stuart Mill, who perhaps thought more deeply about humanitarian affairs than any other economist has for 100 years. This is a better-balanced quotation than the more familiar one from Henry Thoreau, so often quoted by people who dislike things humanitarian. **Thoreau** said:

If I knew for a certainty that a man was coming to my house with the conscious design of doing me good, I should run for my life . . .

In varying degree Mills, Thoreau, and Johnson all have their guards up against do-gooders, and with reason.

But we have to be careful that we do not allow the sometime ineptitude of giving to cast a cloud on all forms of charity, or to be a rationale for choking back every urge to help those in need.

The subject has special interest to me. I was the first co-ordinator of the Food-For-Peace Program, enacted in 1954. I have personally inspected the operation of this program in a dozen foreign countries. I belong to that small group of people who have given away the most food in the world's history. There are some things that can be learned in such an experience, and I propose to share them with you, as I perceive them.

First, There must be merit to Public Law 480, Food-For-Peace. We have had it for a quarter of a century and have moved \$25 billion worth of farm products with it. The law remains pretty much in the form in which it was first enacted. One can't brush aside as irrational or counterproductive a piece of legislation that has stood up so well so long.

Second, It is harder to give something away successfully than it is to sell it. In this I agree with Johnson. The dangers are great. It is possible to build a bond of

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charity which is hurtful both to giver and receiver, a bond which neither the donor nor the recipient dares break. But it is also possible, by judicious giving, to save lives and to restore hope. In any case, it is not possible in the modern world for a wealthy nation, possessing an abundance of food, to stand idly by while large numbers of poor people starve in some other country. That may have been possible 100 years ago, but not now.

Third, Food-For-Peace has a number of objectives most of them selfish, as Johnson so well says. To the purist who wants his philanthropy undiluted, this is a blemish. But to the pragmatist this is a help. I do not fault the program because it serves two or three or four purposes rather than one. Humanitarianism is rare enough in this world so that if it can get a lift from motives that are esteemed less worthy, all but the idealist can be happy.

Fourth, We should not expect thanks for the food we give. It is best not to expect it because we are unlikely to get it. Briefly, of course, some thanks for alleviating a desperate situation, but not enduring thanks. Though the people we help may be poor, they nevertheless are proud. They regret being unable to help themselves; the fact of the gift makes obvious their dependent status. Few people are grateful to the giver who lifts up for all to see the fact of their dependence. The belief that the people in these poor countries want to be deeply and continuously dependent on us is a myth.

Fifth and finally, There are such limits on giving and receiving as to rule out humanitarianism as a way of solving the world's food problem. I agree with Johnson on this point. The relationship between the volume of giving and the benefit that ensues is in the form of a curve, not a straight line. At too low a level, the opportunity to help is foregone. At too high a level, dependency is created and disincentives occur. At some mid-level net good results. I think the volume we have settled on — now between \$1 and \$2 billion a year, is in the intermediate, helpful range.

In summary, I believe that any appraisal of international trade which limits itself to the private commercial trade and omits reference to unrequited transactions misses both the facts and the philosophy of the modern world. I commend those who set up this symposium for including the subject on the program:

Financing World Trade

Tilford C. Gaines*

The international financial system has grown and evolved immensely over the past two decades. In the late 1950's the Eurocurrency market was only beginning to emerge, for all practical purposes there was no Eurobond market, and extensions of commercial credits were limited to the old commercial banking function of short term trade financing. All of that has changed. Total deposits in the Eurodollar market today are in excess of \$400 billion. The international bond market last year underwrote a record volume of new long term financing. And commercial banks have become increasingly innovative in responding to international demands for credit.

It is not coincidental that international trade has flourished side-by-side with the explosive growth on the financial side. In fact, it has been the growth in trade more than anything else that has accounted for the evolution of the financial mechanism. Just in the four years 1973 to 1977, total world trade increased by one-half, from about \$1 $\frac{1}{3}$ trillion, exports and imports combined, to more than \$2 trillion.' Most of the \$2 trillion of world trade required financing in one form or another.

Unfortunately, the available data on financing international trade are extremely sparse and incomplete. It may be asserted, as I have, that almost all trade requires some type of financing, but it is impossible to prove the point statistically. The concern of this symposium is trade in agricultural products, and I can assure you that statistics in that area are virtually nonexistent. Therefore my comments today will be more of a general nature. Whatever numbers are mentioned, as they have been above, will be round numbers that I am confident are in the ball park but that should not be analyzed too closely.

The forms that credit flows take in financing international trade are varied, but generally they may be broken down into three categories: (1) True trade financing; (2) Project financing; and (3) Balance of payments financing. A purist might take the position that only the first category, trade financing, should be discussed at this symposium, since the other two forms of financing involve circumstances other than trade. Generally I would agree with that proposition except for the fact that it is impossible to draw a clear line between trade finance, project financing, and balance of payments financing. Moreover, and of equal importance, the fact is that

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the data are not available to draw the distinction, so that I cannot draw it even if I would.

"True" Trade Financing

Those of you who remember your first college course in money and banking might recall that our present banking system was based upon a need to finance trade, primarily international trade. When the Federal Reserve Act was written, shortly before World War I, the intention was to design a central bank patterned after the Bank of England, and to encourage the growth of a commercial banking system along the lines of the British system. The principal financial instrument in this system was to be "bankers bills" or, as we know them today, bankers acceptances. Bank credit extended against such bills was considered to be self-liquidating since it would be employed only in the production, transportation, or marketing of real goods. As goods changed hands, the bills would be liquidated. A good part of the Federal Reserve Act and Federal Reserve regulations as they exist to this day deal with bankers bills.

In their admiration for the British system, Senator Carter Glass and his associates in 1913 did not recognize that the thrust of growth and therefore of credit extensions in this country was directed toward internal growth of the United States rather than to external growth as in Britain. Therefore, the bankers acceptance market never became the center of our money market as had been intended, the execution of Federal Reserve policy developed along a path not comprehended in the original act, and the resulting banking system differs in many important respects from the pattern on which it was modeled, i.e., the British banking system.

Until the post-World War II period, however, bankers acceptances did continue to play an important role in financing the movement and storage of commodities, particularly agricultural commodities, both within the United States and in international trade. To that extent, the Federal Reserve Act and the "real bills" doctrine that it embodied continued to be a part of the banking system. But the growing restraints on trade in the 1920's and particularly the 1930's, and the disruption of normal trade during the war years of the 1940's, held down both conventional international trade and the need for its financing. Therefore, my discussion today about the growing problems of financing international trade will deal only with the post-World War II years and, more particularly with the most recent four or five years.

As of the end of 1977, total short term debt owed U.S. banks by foreigners amounted to \$77 billion. In addition, the total of bankers acceptances outstanding amounted to \$25.6 billion. Both of these figures were alltime records. In most cases, these credits on the books of U.S. banks were a direct reflection of financing extended by the banks to support international trade. But it is clear that this volume of short term financing falls far short of what one would expect in view of the fact

that total international trade last year, as noted, came to \$2 trillion. The explanation is simple enough. Most important, the trade figures are global while the bank credit figures are only for the United States. Second, a fairly large part of world trade does not require financing at any stage. Third, "true" trade financing may involve a credit commitment of only a few days or a few weeks, so that any given volume of credits might turn over many times in the course of a year.

Even in the case of routine, short term trade financing, however, a number of problems arise that can and do affect the ability or willingness of the financial system to finance it. Most important is the practice among the developing countries, some Eastern European countries, and others, to impose obstacles to the repayment of trade credits. For example, it is a fairly common practice to require that all foreign exchange receipts from exports pass through the central bank and that foreign exchange payments for imports be approved specifically by the central bank. If a country is running a balance of payments deficit it might impound foreign exchange receipts and authorize their distribution to pay for imports only with a lag that would help to disguise underlying balance of payments deficits. In such cases, the lender financing the transaction is unsure of when he will be repaid. Moreover, there have been enough examples of moratoria on foreign claims to raise some questions as to whether or not payment will ever be received. Obviously, this circumstance discourages the financing of trade with countries following such policies and, by itself, is a deterrent to the growth of world trade.

As a general proposition, however, the ordinary month-by-month financing of trade does not encounter many obstacles and there has not been, to my knowledge, any situation in which the availability of financing was inadequate to provide for foreign trade needs. In dealing with the analysis of country risks in international lending it obviously is necessary to include all outstanding debt of a given country and prospective foreign exchange receipts in the analysis, including straight trade transactions of an essentially short term nature. But the need for a country to keep open the financing channels for critically needed imports and exports ordinarily is sufficient to guarantee that, whatever the country's policies might be in other regards, it will not interfere.

Project Financing

It might seem to be a fairly simple exercise to distinguish between trade and project financing. For example, credit extended to facilitate an international shipment of food and feed grains, where payments should be expected to be prompt, should be easily distinguishable from credit extended to finance the construction of a new plant facility that might take five years to complete. But this pattern of simplicity does not stand up in the complex welter of day-by-day events. As already noted, a country might find it necessary or expedient to delay payment on a straight foreign trade transaction simply because it has to ration its outlay of foreign ex-

change. On the other side, even an intermediate term project financing deal may be made up of many component parts, some of which partake more of ordinary trade than of term financing. For example, how does the delivery of a bulldozer to a construction site differ from the delivery of a grain shipment to a food warehouse. Each is a current trade transaction and each might be settled currently as a matter of course.

Having said this, it is nonetheless true that project financing is perceived to be different not only in terms but in kind from trade financing. An important reason for the distinction is that project financing more often than not involves the shipment of goods and supplies from a developed country to a developing country against a contract that calls for delayed payment. It is this kind of financing that has attracted considerable attention in recent years and considerable criticism of international bankers for extending themselves in risky credit situations. And it is here that the availability of credit to finance trade has been unsure. In fact, it has been the accumulation of this intermediate debt that, in many cases, has brought into question the total financial viability of a country even on short term trade credits.

As in the case of trade financing, there has been no evidence of a shortage of credit for project financing so long as the project itself appears to be an economic one. One important difference in financing techniques is that whereas trade financing is ordinarily handled by a single bank acting for its own account, project financing often, even usually, involves an amount of money too large for a single bank to do the financing by itself. In those cases, a group of banks in a single country might form a syndicate to do the financing or, increasingly more frequently, the financing might be handled in the form of an internationally syndicated loan. In the latter case, the leader or leaders of the syndicate may be commercial banks, but often the deal is put together by a merchant banking house or another financial market middleman.

The vastly increased availability of project financing in recent years has been of significant importance to many less developed countries in their efforts to promote economic growth. Prior to the emergence of the Eurodollar market as a major international financial institution, many of the projects that have been financed through syndicate loans probably would not have been financially feasible. While the growth and activities of the Eurodollar market have occasioned many expressions of concern, and while credit extended through that market along with other forms of credit creates a risk of the world becoming addicted to debt, it should also be recognized that the existence of the Eurodollar market has probably made a greater contribution to LDC development than any other single event.

Because of recent developments that have vastly increased the need for international finance, developments that I will discuss later, some countries have found themselves over-borrowed. In a few such cases, the private financial system has been reluctant to extend new credit. In other words, on the basis of a country risk analysis some of these countries did not appear to be good credit risks. In most

cases, the private lending syndicates have been able to work out an arrangement to restructure outstanding debt so as to avoid the default by the borrowing country. In such cases, the International Monetary Fund has sometimes been called in to supply additional credit and to impose stringent economic policy conditions upon the country, intended eventually to correct the underlying problem. In view of the amount of discussion there has been on the shakiness of some internationally syndicated loans, it is interesting to note that so far there has not been an actual default on a credit. It speaks well for the international financial system that it has been able to ride out the upheavals of recent years without serious adverse developments.

In wrapping up this discussion of project financing, I would like to repeat that both in fact and in theory it often is impossible to distinguish normal trade from project financing. When a lending syndicate analyzes the credit-worthiness of a given country, all types of debt outstanding are included in the analysis. Moreover, the analyst looks to the future behavior of exports and imports to determine the country's ability to service its debt. Were a country or one of its agencies to default on a credit, it would be not only longer term financing but short term trade financing as well that would be affected.

Balance of Payments Financing

It also is impossible to distinguish balance of payments financing from the other two types of financing I have discussed. In the jargon of commercial banking there is a phenomenon called the "evergreen loan." This is a loan that theoretically is cleared up at least once each year, but that in effect is a permanent loan on the books of the bank and a permanent component of working capital for the borrowing company. The analogy with international balance of payments financing is very direct. Realistically, when the government, agencies, or businesses of a country borrow, net, from external sources, that credit is going to finance the country's balance of payments. Reference has been made to the practice of some countries of rationing available foreign exchange so as to be able to schedule debt repayments in ways that will not adversely affect the country's credit standing. Reference has also been made to the restructuring of debt in a form that will make it easier for the borrowing country to service the debt. In both cases, the additional debt involved and/or the stretching out of repayment of old debt is part of the financing of the country's payments deficit.

Important developments in the last few years have distorted the balance of payments of countries all around the world, both developed and developing countries. These distortions have created very large new credit needs. Most important of the developments, of course, was the increase in international oil prices in late 1973 and early 1974. The quadrupling of oil prices at that time led to an income shift from oil consuming countries to oil producing and exporting countries. In spite of the fact that imports by the OPEC countries have increased enormously in the last

four years, the net trade surplus of the OPEC countries as a group is estimated to be still running upwards of \$30 billion.

The impact of OPEC surpluses upon the payments balances of oil importing countries has been most uneven. In general, the developed countries of Western Europe and Japan have been able to pay their oil bills. Similarly, many developing and semi-developed countries either were able to develop their own energy sources, to increase their exports of other products, or to restrain their imports of other products by enough to restore balance to their trade accounts. On the other side of the ledger, the United States in 1977 ran a trade deficit of more than \$30 billion, and many non-oil producing developing countries also ran sizeable trade deficits. All of this leads to the need for financing balance of payments deficits. In the case of the U.S. deficit, the financing took the form of accumulations of unwanted dollars in the central banks of the surplus countries. Less developed countries in many cases were financed indirectly from the surpluses of the OPEC nations. The OPEC surpluses did not flow directly to the deficit LDC's to assist in financing trade deficits, but instead flowed into the money market in this country and the Eurodollar market abroad, where private financial institutions accepted the rôle of intermediating between the surplus oil countries and the deficit non-oil developing countries.

The increase in oil prices has not been the only important influence on world balance of payments patterns. Prices of many materials produced by developing countries have been depressed, while prices of other products have soared. For example, high prices for coffee have benefited Brazil and other coffee exporters in Latin America and Africa. Meanwhile, prices of nonferrous metals, particularly copper, have been depressed and have seriously affected the trade accounts of the exporting countries. These and many other developments have imposed strains upon the financial markets to accommodate the necessary movement of funds from one country to another.

At the risk of repeating myself, it should be stressed again that at the time the credit is extended it usually is impossible to determine whether the credit is to finance a trade transaction, a balance of payments deficit, or a specific project. To employ a cliché, funds are fungible. Whatever the stated purpose of the credit, or whatever the sources of repayment, the results are reflected in a country's balance of payments accounts.

It is only when a situation is interpreted in terms of the availability of credit that significant differences amongst the stated reasons for the credit can arise. In most cases, there is an abundant availability of credit to finance trade transactions. And in most cases, there is ample money for project loans where the project is economically viable. However, when the borrowing is by a sovereign government, somewhat sterner criteria might be applied. For example, a financial institution that might be quite willing to finance imports of a given country and/or to participate in financing a project, might be reluctant to participate in a syndicate under-

writing a loan to that country that does not have a specific purpose. It is here that the financing of balance of payments distortions becomes less sure, and it is the public debt of a country outstanding in foreign hands that can lead to an overall debt picture that could even result in reluctance to finance basic trade transactions.

Conclusion

There is ample credit available to finance present and prospective international trade. There also is ample credit to finance longer term project investments and balance of payments deficits. Whether or not availability can be translated into actual access to credit funds depends importantly, however, upon the overall structure of a country's debt and the prospects for repayment of that debt.

Note

1/It may appear that combining imports and exports in this way involves double counting. In a trade balance sense that is true since an export offsets an import. Looked at from the point of view of financing trade, however, the concern should be total trade not just exports or imports.

Discussion

Benjamin S. Jaffray*

It was a great privilege for me to accept the invitation of Marv Duncan to participate in this important symposium sponsored by the Federal Reserve Bank of Kansas City. I am especially pleased to fill the role of discussant for the paper you have just heard presented by Til Gaines, who is one of the outstanding banker-businessman economists of the day.

For several years I have had the opportunity of knowing Til and of reading his comments and analyses. Til's paper provides an excellent overview of the international financial system, how it works, and the potential it has to serve the international trading community. The somewhat staggering figures he related on the absolute level of international trade and especially its growth in the last five years clearly emphasize the importance of this activity.

There is little I can add in terms of specific comment on Til's presentation. I would, however, like to focus somewhat on our agricultural exports and the various agricultural export credit alternatives available to support them.

It is not news to anyone here that as a country today we face many problems; the dollar has been falling in relation to other currencies, notably the deutsche mark, Japanese yen, and Swiss franc, our trade deficit is climbing, and there are signs that there is a serious rekindling of inflation and inflationary expectation. There is concern about capital formation, business incentive, and, indeed, the fragility of our economic and business systems.

However, one of the bright spots on the horizon and one of the greatest opportunities to contribute to a stronger national economy is in the area of the expansion of our agricultural exports. This activity is responsive to the problem of low farm prices, our balance of trade, and the strength of the dollar and inflation, and whatever impact there might be on food prices in this country is usually exaggerated. It is also important to remember that agricultural production represents a renewable resource.

For perspective, reflect for a moment that in 1977 our agricultural exports reached a record high of \$23.7 billion and the \$10.2 billion export surplus in farm products certainly prevented the U.S. trade balance from slipping to an even greater deficit. In 1955, U.S. grain exports were 550.0 million bushels. That figure increased to 1.4 billion in 1969 and to 3.4 billion bushels in 1977. Sixty per

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cent of U.S. soybean production, **40 per**cent of U.S. wheat production, and **27** per cent of U.S. coarse grains production were exported last year. The production of one out of every three acres in the continental United States is sold abroad.

These figures indicate that the United States has achieved a fantastic record in agricultural exports. Although a recent issue of *Business Week* characterized many U.S. industries as reluctant exporters, this description certainly does not apply to the agricultural sector.

Specifically, what is the role of credit in supporting our agricultural exports? As **Til** Gaines pointed out in the conclusion of his remarks, there is no real shortage of credit now or should there be in the future, provided, however, that the export or the project to be financed has solid economic merit and assuming that the recipient of the financing is credit worthy. Agricultural exports can usually be imminently financed by the commercial sector if effective title is held by a responsible and credit qualified borrower. There is, however, a **philosophical** question whether or not it makes sense for the commercial sector to continue to finance the commodity much beyond point of consumption — especially in a developing country. The challenge is that the greatest need for credit to finance the purchase of our agricultural exports emanates from the developing areas of the world which, for a variety of reasons, often fail to qualify for commercial credit.

Given the nature of the world market for our agricultural exports and credit qualification considerations of recipient countries, it is clear, therefore, that the financing of agricultural exports involves, to a unique degree, governmental policies and programs.

A good deal of our success in the expansion of agricultural exports since World War II derives from the use and liberalization of agricultural credit programs. Our leading competitor countries, Canada, Australia, and the European economic community, all have instituted credit programs to facilitate agricultural exports. These credit programs range from **short** term facilities at commercial rates of interest to very soft loans or outright grants. A complicating factor is that many of these competitors operate through governmental and quasi governmental marketing agencies capable of committing substantial governmental financing.

Since the U.S. grain export system is handled through private channels, governmental financial assistance has taken more visible forms.

The most important source of credit for agricultural exports has been the **Commodity** Credit Corporation through a program known as GMS-5 and a program more familiar to most of you, Title I of Public Law 480. Don Paarlberg mentioned that Public Law 480 sales have totaled \$25.0 billion since the inception of this program. Both GMS-5 and Public Law 480 have been modified to provide more flexibility with respect to repayment provisions and interest rates and will continue to be important vehicles in the future.

There is a need, however, to develop international credit programs to bridge the gap **between** short term commercial financing and GMS-5, currently limited to

three years, and long term credit available under Public Law 480.

Til Gaines alluded to balance of payments financing. It is important to note that our agricultural credit programs, whereas primarily designed to expand agricultural exports, also provide important benefits related to balance of payments considerations. Many recipients of Commodity Credit Corporation credits — especially Eastern European nations — are being encouraged to buy U.S. agricultural commodities through programs designed to ease their balance of payments pressures. In the case of Title I, Public Law 480 shipments, recipient countries can use the proceeds from Public Law 480 internal sales to finance development projects. This concept, of course, is close to "project financing" discussed by Til Gaines. In addition, in recent years Public Law 480 programs have been modified to insure that development and nutrition projects undertaken with Public Law 480 funds benefit the poorest of poor within recipient countries.

There is a nationally constituted task force composed of people from both the private and public sectors evaluating Public Law 480. This group will probably conclude that such directions should be continued and enhanced by a substantial expansion of Public Law 480 food shipments and by making extended commitments to recipient countries, which should encourage these countries to plan development projects more intelligently. This type of financing is beyond the scope of regular commercial financing, but it obviously plays a vital role in agricultural exports, serving not only the interests of the United States but also the long range interests of the recipient consuming countries.

American use of agricultural export credits has also been linked to market development considerations in building a future commercial demand base. One of the principal arguments for the creation of governmentally supported international trade credits is not so much to compete with other exporting countries but to encourage growth in the overall demand base, a substantial share of which growth should be captured by the United States. Last year, the United States accounted for about 50 per cent of world agricultural exports.

Given the prominence of the government in financing U.S. agricultural exports, there is the existence of or the threat of accompanying governmental restriction on export financing. A case in point is the issue raised by Title IV of the Trade Act of 1974, what has become known as the Jackson-Vanik Amendment. This amendment denies the extension of export credit to centrally planned economy nations having discriminatory emigration policies. The protection of civil rights intended by that amendment is, of course, a worthy goal, but the fact is that credit programs have never been an effective lever on the civil rights actions of foreign countries. I believe there is an overwhelming consensus of those involved in international trade that we could be more persuasive on such issues as civil rights with countries who are full trade partners.

Another threat to the effectiveness of our agricultural export credit programs is to make the extension of such credit contingent on the use of expensive U.S. flag

ships. In the case of Public Law 480, the requirement can be 50 per cent. The current five-year Soviet Agreement requires that at least one-third of Soviet purchases from the United States must be shipped on American flag vessels. The rates, however, on these vessels are two or three times higher than on foreign flag vessels. We are, therefore, giving our worldwide competitors a tremendous advantage in trading with the Soviet Union.

This is not to say that the U.S. Merchant Marine is not important and, indeed, it may need subsidizing. The issue, however, is whether the U.S. farmers should be forced to pay that subsidy and whether or not our agricultural export activity, so important in so many respects, should be burdened by this provision.

No country in the world has the combination of resources that the United States has and can devote to the expansion of world agricultural trade. There are terribly important and complex economic, social, and political issues confronting the agricultural sector. These issues can be met without compromising the advantages and opportunities we have in world agricultural trade.

The United States has the ability to produce to meet our own needs, to provide realistic reserves, and to fill expanding demand abroad. The vital link between our productive capacity and a good share of that demand is effective and appropriately structured international credit programs.

Political-Economic Realism — Agricultural products in World Trade

Clarence D. Palmby*

"World Food Supply and Demand: How the Two can be Linked" is a phenomenon that defies precise thinking.

Both supply and demand (but particularly demand) are subject to political-economic decisions. This is the new dimension affecting demand which I wish to discuss today — political decisions having unpredictable economic impact.

U.S. officials decided in June of 1971 to no longer allow gold to move overseas for settlement of accounts at \$35.00 an ounce. Was this decision political? Or was it economic? I think it was a political-economic action.

The members of the Oil Producing Exporting Countries (OPEC) have increased the price of their petroleum for export about 300 per cent. This too, in my opinion, is a political-economic decision.

Government rulers in several countries decided a few years ago to "freeze" or not increase the price of food to consumers — even after world prices of products being imported to produce food items ballooned. I identify this action as also being political-economic.

How do these "new dimension" actions of governments relate to the activities of a company operating in a global grain market? I shall attempt to illustrate the importance of recognizing the forces at work in the world influencing supply-demand projections with emphasis on demand, the more mercurial of the two imponderables.

The involvement of the "private sector" in the export of grain, oilseeds, and their products from the United States is a relatively new development.

Following World War II and until 1948-49 during the Truman era, the U.S. government allocated and sold grain to our allies and engaged in food assistance programs with our World War II adversaries. In late 1948 the private trade was authorized to enter into export contracts with overseas buyers, to the extent buyers were prepared to deal with private sellers offering U.S. grain.

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Some of my experienced friends advise that the grain export capability of the United States in 1948 was about 12 to 15 million metric tons per year. The capability today is perhaps nearly 10 times what it was 30 years ago.

The significance of political decisions and the influence of such decisions on "real demand" for food within a nation were factors then and are even more critical now.

Let's analyze this history briefly:

When were the seeds for massive trade in farm products sown?

"In the 1940's — during and immediately following World War II." At that time the United States was called upon to supply huge amounts of food for starving Europeans and Japanese.

During and following the war, farming in the United States was changing rapidly. Commercialization was becoming commonplace. Specialization in the production of grains, livestock, and poultry was replacing the diversified operator.

A good example of specialization and mass production was the poultry industry, most importantly the broiler segment. Large production enterprises replaced hundreds of diversified farm flocks. Feed conversion rates were lowered. Disease control was greatly improved. Cost of "chicken" meat to consumers was reduced. Fried chicken became an everyday possibility to those who desired it.

Layer flocks also became fewer in number and highly efficient, replacing sideline diversified farming-type egg producers.

Specialization and production concentration in hog production has moved much more slowly in the United States for reasons well known to this audience. I mention this class of livestock because swine production constitutes a part of my story as I later discuss capital and financial requirements of our overseas customers.

Our cattle feedlot industry must be recognized as an extremely important development in the United States. An enterprise quite peculiar to our nation and the envy of many of our trading partners, it is this industry which has made possible a dependable cereal reserve for our overseas customers. The volume of grain and other concentrates utilized in cattle feedlot operations is highly influenced by price. Because of this, grains ordinarily utilized by feedlot operators become available for human consumption "at a price." Level of grain use by U.S. cattle feeders fluctuates year by year as determined by price and availability in relation to other feed ingredients. This industry has performed a great service in utilizing large amounts of grain in times of abundant supply and retrenching during periods of lower grain availability. I am afraid this fact is not well understood by nonagricultural groups. On the other hand, I find a growing number of overseas agricultural professionals do understand the economics of our grain utilization.

With this capsule review as backdrop I now wish to discuss agricultural production developments as they have changed in other countries — our trading partners.

Agricultural policy — and in turn, emphasis on food in Japan — has evolved

with great consideration for animal proteins and vegetable oils. That nation moved through an egg production expansion period into commercial swine production and then into a period of integrated broiler production. All three developments reflect rapidly expanded uses of concentrates for production of eggs, pork, and poultry meat. This development in Japan — perhaps more than any other — has been the linchpin of the huge trade between the United States and Japan.

As an aside, perhaps U.S. interests might have been more aggressive in capitalizing on consumer ferment in Japan. The move to a change in diet created a climate of openness which could well have been exploited by some U.S. makers of consumer products.

Many will say changing food requirements were automatic in Japan (and other countries). There is **truth** to this observation but do not underestimate the persuasiveness of U.S. agriculture as a catalyst in world food policy. In fact, some believe our trading partners should *not* be following U.S. agricultural production trends.

A number of thoughtful students are of the opinion that high levels of animal protein and vegetable oils in our diet are not desirable. And some criticize the U.S. fondness to overuse automobiles as being selfish and short-sighted. This is not the theme of this paper except to recognize the fact that "gas in our cars" is closely related to broilers, eggs, swine, and vegetable oils (which make food more tasty and nourishing).

Now to my central theme.

Supply-demand figures of the world grain situation are of great importance to government planners, processors, users, producers, and merchandisers in our country and trading partner nations.

Supply-demand figures therefore are subject to what I choose to call governmental or political-economic pressures and decisions. This is particularly true as regards real demand for food or raw material, such as grain to be utilized for the production of livestock and poultry within a country or countries.

To fulfill their needs foreign exchange availability is a prime requirement for importing countries. Trading companies must assess this matter with caution.

Globally there is also another — almost equally important — factor, not well understood and impossible at times to predict — namely governmental or political decisions, leading to political-economic judgments within nations.

For example: As late as six years ago, even after the United States had shut the gold window, some of our most noted international trade students expounded that demand for and volume of U.S. grain imports would be severely limited by foreign exchange earning capability on the part of some major nations, including developing countries. Because of decisions by those in power in countries such as the Soviet Union, several East European nations, and India to place higher priority on food for their people, foreign exchange earning capability became of lesser importance.

In the case of Eastern European countries and the Soviet Union, swine, laying hens, and broilers were becoming increasingly important in governmental-economic decisionmaking. In the case of India "cereals for survival" was receiving greater consideration by political leaders.

To further illustrate, let me share what appears to be a development in the use of credits from the West by Bloc countries and other nations. I hesitate to get deeply involved in this subject of finance and credits with so many money men in the audience. On the other hand I wish to refer to a current situation and analyze its meaning.

Case in point. The U.S. government has greatly expanded the use of Commodity Credit Corporation (CCC) export credits. This is generally known as the G.S.M. - 5 credit program. In recent years the volume of U.S. farm products financed under this authority did not exceed \$1 billion per year and in most years the volume was considerably below this figure. In this fiscal year the total authorization is \$1.7 billion. Credit under this program is extended for a maximum of three years at a nonconcessional rate of interest.

Congress, at the present time, is considering further expansion of the CCC export credit program. Many agricultural associations and organizations recommend up to 10-year credits be authorized.

In times past, government administrators have hesitated to expand this credit program because once the wheat, vegetable oil, or feed grains were exported and consumed within a recipient country the collateral was gone. Grain, being consumed within a relatively short space of time, does not lend itself to periods of financing which are peculiar to capital goods, and typical periods of private financing might be six months, or one year at the most. Elementary banking prudence would dictate that these terms not be exceeded by the private sector.

I now detect some change in the thinking of our own government officials. Perhaps, more importantly, I detect a change in the views of government policy-makers in recipient countries.

As CCC funds have become more readily available to finance U.S. agricultural exports, government officials in borrowing countries have come to look upon this program as simply another source of credit. I am not saying this is good or bad. The attitude only illustrates the increasing demand for "credits." It further shows the manner in which the development is related to the political decisionmaking process in determining priorities.

Should the further development of broilers, swine, and commercial layer flocks in some countries be high priority items? This question becomes a political-economic matter.

If Congress decides to authorize CCC to finance agricultural exports over three years, U.S. government agencies and policy makers will also become more deeply involved with the decision related to granting credits to specific countries. Of necessity our "money managers" will become more important in the deci-

sionmaking process, including specific commodities to be financed as well as with the question of the total U.S. credit package offered to recipient countries:

This prediction is not a criticism; it is only a judgment statement.

To relate the matter of export credit to our own business of grain export, the private trade is able to offer only limited financing terms.

The domestic grain industry requires enormous infusions of capital, to acquire and maintain elevators, rail cars, barges, and all the fixed assets required to move grain from interior points to U.S. or foreign ports, to condition the grain, etc. Further, huge sums of money must be invested in grain inventories.

There is but little financing which the exporter himself is able to provide to his buyers; consider, for example, that a single cargo of some 25,000 tons of soybeans is worth about \$7 million F.O.B. vessel U.S. port.

The extension of credit naturally involves some risk taking; yet, paradoxically, these risks are not compensated for by an increase in the sale price commensurate with the risk. This factor, combined with the narrow profit margins typical of our business, give but little encouragement to the trade to sell on credit, unless the risk can be shifted to someone else.

This means that the exporter is left to his own devices in the very cases where the job is most difficult. We have already said the exporter's own resources cannot generally be committed to this task. The exporter turns to banking institutions in order to obtain nonrecourse financing, that is to say, a transfer of risks from himself.

These risks are basically two-fold. The first one is, of course, that the obligation may not be paid at maturity; the second one, that the interest rate being charged to the buyer will prove insufficient over the term of the financing, to cover the seller's cost. Both of these risks may be covered with a bank, if one can be found willing to do so.

The number of cases in which private industry is called upon to arrange for credit terms is relatively small, and nonrecourse financing is seldom extended. If foreign buyers are unable to get financing, they will eventually commit hard currency reserves to what is an acquisition of essential commodities. Cash will somehow be found to prevent critical shortages of food and feed.

When the United States builds up large surpluses of grain, it is necessary for the private sector as well as our government to exercise all their ingenuity and to offer grain on terms which are required by buyers.

I did not discuss in detail the significance of the changing value of the dollar in relation to a few other major currencies nor to gold as compared to a few years ago.

For instance: do you remember when U.S. #2 hard red winter wheat at the Gulf was pegged at about \$60.00 per ton? This approximate selling price was maintained through government subsidies (which at times were zero). Do you realize that during the time of heavy wheat export selling nearly six years ago U.S. wheat at the pegged price was about equal in value to one ounce of gold. Today, a ton of the

same class of wheat is available for export at the Gulf for about three-fourths of an ounce of gold. Prior to June, 1971, one ton of wheat traded for about 1.65 ounces of gold.

What is the meaning?

World price of wheat is cheaper today in terms of the major products that some countries have to exchange for our wheat. While the dollar is still the key currency in the world there are other commodity-price relationships that have changed. Overriding these are economic-political policy considerations of governments responsible for the welfare of their people.

And perhaps of still greater significance the age-old and important matter of "rulers maintaining the power to govern."

I wish to conclude these remarks with a repeat of my opening comments.

Prices of items and products keep changing in the world. This trend will continue.

Some products are renewable each year or over a period of time. Others are not!

Expectations of people continue to become "real" for more "things" including the demand for more calories, more eggs, more meat, and more fats and oils. Political leaders, be they elected, self proclaimed, or otherwise elevated to power are keenly aware of this ferment.

This realism more than any other leads me to believe we are living through the last round of multilateral trade negotiations under GATT. Even today, in my opinion the present Tokyo Round would not be commenced as it was only four years ago. World political-economic forces are moving that rapidly.

This then is my contribution to a consideration of: "World Food Supply and Demand: How the Two Can be Linked."

Putting it concisely: "The world moves on."

Discussion

Harold F. Bjarnason*

Mr. Palmby has addressed himself, in his paper, to the impact of political-economic decisions on the international supply of and demand for grains. Certain political-economic decisions do and will continue to influence levels of international trade in grains, and the ways in which that trade is financed. The point is well made, and warrants greater examination. Also, it should be viewed from the exporters' as well as from the grain importers' perspective.

In the opening pages of his paper, Mr. Palmby singles out demand as having a greater economic impact than supply. But we have to be careful here, for what he is referring to, I am sure, is not total demand in importing countries, but rather their "import demand." Total demand for cereals (especially wheat) in most grain importing countries is fairly predictable on a year-to-year basis. Consumer demand does not respond to international grain price fluctuations (unless foreign exchange holdings are a problem, and even then, often not greatly) because grain prices in importing nations are usually set well above international levels. Consumers in these countries are in effect isolated from international prices (actually, this is normally the case even in those countries where grain prices are set at relatively low levels). When domestic production does not meet a country's needs, therefore, it imports grain to make up the difference. Import demand, in other words, is to a very large degree, a function of domestic production and supplies.

It may be useful to quickly test this statement with respect to some of the world's major grain importers. The most publicized grain importer in recent years has been the U.S.S.R. Since 1972, and in conformity with its five-year plan (in which a commitment was made to improve the diet of the Soviet populace), production shortfalls in that country have triggered large international grain purchases.

In the EEC, great political-economic incentives have been given to encourage self-sufficiency in grain production. Internal prices (for example wheat at about \$6.45 per bushel with an import levy last week of \$3.68 per bushel) are set far above international levels to accomplish this objective, with the result that relatively cheap grain is purchased internationally only to fill in the demand-supply deficit. The case in Japan is similar in that internal prices to millers (with 1 CWRS 13.5 per cent protein wheat sold by the Food Agency to Japan millers at about U.S. \$7.70

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per bushel) are well above international levels, though production is so small that most Japanese wheat and feed grain requirements have to be met by international purchases. Japanese farmers, incidentally, receive about \$15.00 per bushel for the wheat they grow.

Even in developing countries, the politics of food is so important that most countries will sacrifice hard-earned foreign exchange holding to avoid the politically hazardous possibility of widespread hunger. Mr. Palmby used the example of India to support this. Food imports in these countries, whether under commercial or aid programs, largely reflect production shortfalls rather than changes in demand or financial considerations.

If we turn now to the world's largest grain exporting nation, *the* United States, certainly supply is more subject than demand to political-economic decisions. Programs to set aside grain acreages or reserves are totally controlled by the U.S. government. Price-support programs at the producer end also fall strongly into this political-economic category. They are instituted to assure the farmers of some minimum revenue.

When we are considering "problems associated with financing increasing levels of international trade" in grains, it is very important to differentiate between financing which makes it possible for a food-deficit nation to import, on the one hand, and financing which attempts to get a competitive advantage on other grain exporters, on the other hand.

Let us first consider the objective of trying to improve one's competitive advantage. If financing aids are not in effect required by the importing country, but exporters provide such facilities anyway, then these exporters are simply conducting business in such a manner as to transfer income from farmers in the exporting nations to governments or buyers in the grain importing countries. It may be useful to analyze this hypothesis further.

The United States, by virtue of its very dominant role as a grain exporter, is the undisputed price leader in the grain world, and will continue to be so in the future. Prices set in Chicago, Minneapolis, and Kansas City or Washington greatly influence the asking prices of all other grain exporting nations.

Since grain prices in most importing nations are well above and fully insulated from U.S. and other exporters' selling price levels, farmers and governments in exporting countries have in effect been subsidizing buyers in grain importing countries. For exporting countries to compete with each other with even more liberal financing terms than we have right now would just increase this subsidy from exporting to importing nations.

If, for example, the aim of the current congressional proposal to increase CCC export credit terms from 3 years to 10 years is to make the United States more competitive with other exporters, then it probably will be self-defeating. For there is likely no way that other exporters could avoid providing the same terms if they wished to remain competitive. The net result then would be that neither the United

States nor other exporters would gain any competitive advantage; they would merely increase their subsidies to foreign grain buyers.

We can go one step further in this discussion and say that if international grain prices were higher, import demand would only be marginally affected, if at all, but the exporters' subsidies per bushel to the importers would decrease by the amount of the rise.

The important consideration in viewing financing of increasing levels of international trade in grains then has to be how to tailor programs to the real financial requirements of the individual food deficit nations.

Aid in the form of outright grants of food grains for people suffering from famine, in countries where adverse weather has resulted in crop failures, will continue. In fact, the need for food aid may well increase as population in many developing nations continues to surge past food productive capacities. Food aid shipments will be financed by the governments of the richer, more fortunate food exporting and importing nations.

Long term credit facilities, such as Public Law 480, may also be required for those countries that have laid the foundation for long term economic development, with a view to shortening the credit terms over a period of years to the point where sales can be made entirely on a cash or short term credit basis, as the importing nation matures economically. Both you in the United States and we in Canada have experienced success with such developments in the past.

Finally, short term credit (up to three years at commercial rates of interest) will continue to be a feature for a number of purchasing countries experiencing some problem with foreign exchange earnings, to facilitate their ongoing requirements for grain imports.

World Food Supply and Demand: How the Two Can Be Linked

Dr. Clayton Yeutter*

Introduction

It is a privilege and honor for me to make the concluding address of this excellent symposium on world agricultural trade. Ed Harshbarger and his colleagues at the Federal Reserve Bank of Kansas City are certainly to be complimented for assembling such a distinguished group of participants, as well as a most impressive audience. Hopefully, the discussions of the **past** two days will stimulate and enhance world agricultural trade over the next two decades or more.

Since the topic of this morning's **program** relates to the linkage of world food supply and demand, I will concentrate primarily on that topic. However, my talk will also deliberately spill over into the subject matter of yesterday's discussions. My intent will be to outline the basic issues of this symposium in a format that could be used for **followup** policy discussions in this or any other country.

Though food policy is an area of study which contains few absolutes, it has at least one parameter with which most of us can agree — that worldwide supply and demand will be in equilibrium on relatively few occasions during the rest of this century. Five years ago we had a situation where demand outran supply, with many agricultural prices reaching their highest levels ever. In contrast, at the end of last year's harvest we found the reverse situation to be extant. Worldwide supply had outrun demand, with prices in exporting countries having reached levels far below production costs.

All of us hope these extremes can be avoided in the future, and many nations are taking steps individually, and perhaps collectively, to reduce the probability of widely fluctuating prices. Nevertheless, some imbalance is bound to occur, if for no other reason than that we still cannot control the weather. With the Soviet Union now being a major element in the world market situation, and with that nation being subject to extremes of both frost and drought, economic uncertainty will

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likely be the rule rather than the exception in the near term, if not the long term. If so, how then can we adjust to the supply-demand imbalances that will inevitably occur?

Supply Outruns Demand

Let us deal first with the present situation, where supply has outrun effective demand. Obviously, there are a **number** of short run steps that can be taken in such a situation, and also a number of longer term actions should the situation prove to be chronic (unlikely as that may be), rather than just temporary. I would like first to enumerate the short run possibilities, since those are the policy issues which face both exporting and importing nations today.

SHORT RUN ACTIONS

1. **Move The Product Into Consumption, Both Human And Livestock.** Nations should permit and encourage the responsiveness of their livestock and poultry industries to situations such as the one which presently prevails. Regrettably, some nations isolate these industries from worldwide supply conditions in the grain and oilseeds sector, thereby minimizing, and sometimes even precluding, a desirable expansion in those industries. This, of course, deprives their consumer sector of an opportunity to expand consumption of these excellent protein foods, and it forces an inordinate level of adjustment in the livestock and poultry economies of "price responsive" nations.

Whether or not an international trading nation has a market economy, it ought to pursue policies which will permit its livestock and poultry sectors to buffer the price and income blows that will otherwise be felt in their own grain and oilseeds industries, and in the grain, oilseeds, livestock, and poultry industries of market economy nations with relatively open trading policies. This was a major element of the price instability which occurred in 1973 and 1974, and we ought to try to improve that situation in the future.

Some adjustment in human consumption should occur as well. At a time of surplus production in the world, governments ought to reappraise policies which discourage food consumption, and which keep the percentage of per capita incomes expended for food at an inordinately high level. In other words, we ought to permit the price system to function in the consumer sector too, thereby increasing consumption levels as farm prices decline.

2. **Reduce Trade Barriers.** In times of surplus, nations should adjust trade barriers which will have an immediate consumption response. Quota programs constitute perhaps the best example, since the import response to a quota increase is usually immediate. Many countries have quota programs which have little, if

any, economic justification, and often a political justification that is long since obsolete. In those cases, they could contribute to the welfare of their own consumers, and substantially benefit exporting nations, by loosening their trade constraints permitting some of the agricultural surplus to flow in.

Surplus situations have often led to strident, unfair, and even irrational trade responses among competitive nations. This is particularly true among exporters, but it "takes two to tango" so importers are not entirely free from criticism. Perhaps the most widely used "throat cutting" mechanism in international trade is that of the export subsidy. When brought into action with all its fury, the export subsidy simply becomes a battle of federal treasuries. Such practices are extremely costly to the subsidizing exporters, many of whom are often developing countries which cannot afford it, and they provide an enormous income transfer to beneficiary importing nations. Though importers may temporarily gloat over such a result, the long term results may well prove to be detrimental, rather than beneficial. It would be well to avoid such noncompetitive responses to a surplus situation, and at least discuss the policy options in a reasonably tranquil, multilateral atmosphere before embarking upon such actions. This is the advantage of an international agreement, with guidelines or triggers which will lead to such consultations.

3. Establish or Expand Storage Programs. This can be done on either a national or international basis, or both, where nonperishable products are concerned. There are a good many nations in the world today which need to protect themselves further against food security risks. The surest way to do this is through an expansion in their own storage capacity. In terms of product cost, the ideal time to do this, of course, is when worldwide food surpluses exist. The product can be purchased at an attractive price, and (if necessary) simply stored in exporting nations until construction of new storage facilities in the buying country have been completed.

This is also an ideal time to create and stock an international food reserve, if there be the political will among major exporting and importing nations to take such action. A well-coordinated international program certainly has advantages over ad hoc, unilateral efforts to establish storage programs in either exporting or importing nations.

4. Expand Aid Programs. Humanitarian considerations should be the primary motivation for taking these actions, either on a grant or long term loan basis. The U.S. program which fills this need is, of course, Public Law 480, our "Food for Peace" effort. Other countries have similar programs, and all may appropriately be expanded during times such as this, providing the expansion does not place undue strains on the distribution network and the agricultural production sector of recipient nations. There must clearly be a balancing of interests in this respect, lest the programs be counterproductive in the long run, though they be helpful in the short run. With that caveat, however, it should be possible to find room for reasonable expansion of such programs in a year like 1977 or 1978. Not

only can this improve the nutritional levels of many hungry people, but it can also have long run market development benefits.

5. Provide Farmers With Income Protection, Rather Than Price Protection. If the price system is permitted to function, a surplus will move into consumption, farmers will adjust their production plans to the price signals that are received, and the unprofitable price levels will probably prove to be temporary. At the same time, it certainly is desirable to provide farmers with a reasonable level of income protection. This can be done through target prices, as is the case here in the United States, or through similar mechanisms that will not impede the supply adjustments that should take place. To achieve this objective a deficiency payment policy (such as that followed by the United States and a number of other countries) would seem to be infinitely preferable to high price support programs.

6. Permit Currency Exchange Rates to Adjust as Market Conditions Dictate. The world has not yet fully adjusted to its new monetary era involving floating exchange rates. As a consequence, some nations are still engaging in "dirty float" operations, which impede the adjustment in trade flows that would otherwise occur. This affects both industrial and agricultural trade, and can have a most detrimental income effect on exporting countries. An aggressive market development program by an exporter — a perfectly proper response to a surplus situation — will fail ignominiously if such an effort is offset by exchange rate manipulations within importing nations.

7. Reduce Production, Through a "Set Aside" or Comparable Program. Programs to curb production will not be met with enthusiasm by importing nations, even in times of surplus. They will inevitably provoke criticism because of omnipresent malnutrition conditions in the world, which are only nominally affected by the availability of agricultural surpluses. This is a sensitive and delicate policy issue, with income distribution and other complex parameters beyond the scope of today's discussion.

Notwithstanding the inevitable criticism, a set aside may well be the most feasible policy option to correct major supply-demand imbalances in the short run. With an inelastic supply and demand situation for most agricultural products, a set aside can have an immediate price response of substantial benefit to producers.

LONG RUN ACTIONS

1. Reduce Or-Eliminate Both Tariff and Non-Tariff Trade Barriers. This is a multilateral exercise which has been traditionally conducted in "rounds" of negotiations; these rounds have been held every few years since the General Agreement on Tariffs and Trade (the GATT) was executed just after World War II. In the future, one must hope that worldwide trade problems will be confronted on a continuing basis, rather than in the stutter-step style that has prevailed in the past. If so, this should permit us to approach more closely the comparative advantage

principle of international trade, which would be helpful not only in surplus supply situations, but in times of shortage as well.

2. Assist And Stimulate The Economic Development Efforts Of The Third World. The growth area for international trade in agricultural products lies in nations which will have both the population and the purchasing power to dramatically expand food consumption. To a very great degree, the nations fulfilling these criteria between now and the year 2000 will come primarily from the Third World. These are countries, particularly in the Far East and Latin America, which have the natural resources, the human resources, or both to advance to the "developed" group, or very near thereto. To the degree that we and other developed nations can help such countries to progress economically, we too will benefit therefrom. There should be a particularly strong motivation for agricultural exporting nations to assist in such endeavors, because of the market potential that is involved, along with the laudable impact this will have on worldwide income distribution.

There will be demand growth in the developed countries too, of course, and this should certainly not be ignored. But population growth has slowed in those parts of the world, and is not likely to alter substantially in the future. Therefore, the upgrading of diets in most countries will supply only limited growth potential in total food consumption. That desirable combination of population growth and purchasing power will likely emerge elsewhere in the world.

3. Eliminate Exchange Rate Policies Which Impede Trade. Importing nations sometimes maintain undervalued currencies in order to stimulate their own exports. This obviously is inflationary, and it just as obviously reduces import volumes. Nevertheless, these nations are willing to pay that price in order to sustain and improve their own export potential. In the long run, however, this will prove to be a shortsighted policy, and market forces will ultimately prevail. In a period of excess supplies, it would be in the long run best interest of everyone to permit the currency market to operate without impediments.

4. Follow Circumspect International Lending Practices. There have been some incidents in recent years when international lending agencies have stimulated the production of agricultural products where surpluses had already driven prices to unprofitable levels. It may be that the loans were proper nonetheless. It is conceivable that competitive forces would call for the phasing out of production of that particular commodity in developed countries, and phasing in of production in one or more Third World countries. If so, the loan program cannot legitimately be criticized.

If, on the other hand, the Third World investment would be noncompetitive, even in the long run, then the loan was a mistake. It is certainly proper to ask that international lending organizations examine their commodity loan practices with considerable care, and avoid adding to already existing surpluses wherever possible.

5. Achieve Additional Stability Through The Use Of Long Term Contracts Or Futures Markets. An individual nation, whether it be an importer or exporter, may take a number of unilateral steps to achieve greater price stability. Some nations already do this through farm policies which isolate themselves from market conditions elsewhere in the world. I am by no means a proponent of such policies, for they simply force the burden of adjustment onto the shoulders of other nations. Furthermore, these policies are too often inflexible and thereby permanently distortive.

In my opinion, there are at least two ways of achieving greater price and income stability in a particular nation, without forcing major adjustments on one's fellow trading partners. One way is through the use of long term contracts, particularly if (as would usually be the case) the contracts do not have fixed price provisions. Such contracts offer an exporting nation a certain degree of market security, while offering the importing partner a certain degree of supply security. Both benefit from this, aside from whether or not price protection is added to volume protection.

A second method is through the use of futures markets. There are active futures markets available today in most of the major agricultural commodities, and many nations, agencies, and firms could avail themselves of the hedging opportunities that those markets provide.

6. Support Research And Extension Programs To Reduce Costs And Increase Efficiency In The Agricultural Production And Marketing Processes Of All Nations. In a long run surplus situation, there may be little that can be done to improve farm prices. But one may well be able to reduce production and marketing costs. If so, income levels will improve throughout the entire agribusiness sector, notwithstanding the adverse price situation. This is a time for the development of "cost reducing" technology, rather than "output increasing" technology. The latter may well reduce the income levels in the agricultural sector, because of price inelasticity of demand. The former, on the other hand, should boost incomes, thereby proving to be a most welcome investment under the circumstances.

Now let us look at what many people believe to be the more likely scenario in future years — the specter of food shortages. There will be some duplication of measures for, interestingly, some apply both in times of shortage and of surplus.

Demand Outruns Supply

SHORT RUN ACTIONS

1. **Avoid "Beggars thy Neighbor" Policies.** Perhaps the greatest contribution that can be made toward the resolution of short run food crises is an act of omission. That is, food surplus nations, such as the United States, should avoid export

restraints and permit market forces to function. A time of food shortage is not a time in which to be selfish. It may, in fact, be a time which calls for actions beyond those afforded by the market. If only price is used to allocate food under such circumstances, the rich will eat and the poor will starve. Therefore, it is incumbent upon rich countries, and rich people within poor countries, to share on a humanitarian basis with those in need. We have not always been this idealistic, in the United States or anywhere else.

As I noted earlier, one of our major problems in "burden sharing" in the food sector is that market forces are impeded in many portions of the world. This means that in a time of shortage, as well as in a time of surplus, the livestock and poultry industries of some countries must bear an undue share of the adjustment. Note, for example, the trauma experienced by the U.S. livestock industry in the food shortage period of 1973 and beyond. Permitting market forces to function will correct this inequity.

2. Immediately Terminate Production Disincentives. Many nations still maintain systems of production disincentives, though they are usually not denominated as such. Involved are national "cheap food" policies; designed to garner the political and economic approval of the consumer sector. These policies are often shortsighted at best, and certainly indefensible in a period of food shortages. Under such circumstances, they ought to be altered or eliminated immediately.

3. Provide Production Incentives Where Necessary. In countries where market forces are permitted to work, such incentives may not be necessary. Attractive prices are likely to stimulate expanded usage of fertilizers, chemicals, and other inputs that will increase yields. In nonmarket economy countries, however, or in countries where the market system is not permitted to function to its fullest, governmental incentives may be essential. In such situations, nations should have standby policies to apply when short term food shortages have developed.

4. Make Food Reserves Available. Whether or not a formalized international food reserve is in existence, nations should make food reserves available to their own people, and hopefully to the world market as well. At a time of shortage, the "triggers" of most food reserve programs should release automatically. In some cases, price movements will achieve such a result; in other cases, governmental action may be necessary. Reserves should move in to distribution, until such time as minimum carryover levels are reached nationally and internationally.

5. Reduce Waste: We still waste tremendous quantities of food in the marketing process, particularly where perishables are involved. Though this is a never ending challenge, there are short run steps that countries and firms can take to reduce waste in a time of crisis.

6. Evaluate Exchange Rate Policies. Even in an era of floating exchange rates, one often discovers individual exchange rate policies which impede trade. These policies, whether they be deliberate or simply due to bureaucratic inertia, can easily lead to a beggar thy neighbor situation when food supplies are short.

This is not a time for "dirty float." Therefore, nations ought to adjust such policies so that they facilitate trade rather than impede it.

7. **Evaluate Fiscal And Monetary Policies.** The shortage of food supplies will have an inflationary impact on national economies, and this impact will be dramatic. Because food is purchased on a daily or weekly basis, and since most housewives make those purchases in cash, food price increases are immediately noticed and immediately felt. The reverberations from this will quickly penetrate the entire economy. This is a phenomenon that was experienced by all of us in 1973 and 1974. At such a time, it would be well for nations to examine their total fiscal and monetary policies to determine whether they are further accelerating inflation. Should those policies be overheating a given economy, they should be adjusted to minimize the adverse impact in the consumer sector.

LONG RUN ACTIONS

Finally, perhaps the most penetrating concern of all — and certainly the most wondrous to every one of us — is that of long run food shortages. All of us have seen population projections where normal food needs exceed any reasonable estimate of food supply availability a half century or a century in the future. The Malthusian model seems to be hovering on the horizon. To date we have kept it hovering, but no one knows when it might ultimately become a reality. What then can we do to stave it off for a few more decades, or perhaps even indefinitely?

1. **Restrain The Growth of Population.** This is an obvious answer, oft discussed, so there is no need in dwelling upon it here. Population can be restrained in any given country, even among those in the lesser developed category. The successful programs are there for anyone to see. The real public policy question is whether a given nation is prepared to embark upon such a sensitive and often politically controversial program. If so, progress can be made; if not, unless that nation is a major agricultural producer or has wealth borne of other resources, it will have to take other painful public policy steps to deal with its long range food supply requirements. Few nations can tolerate indefinitely — politically, let alone economically — the impact of a 3.5 per cent population growth rate. Therefore, as a practical matter, population control programs will become imperative in many of the nations of the world.

2. **Stimulate Production.** Another obvious response, with many ways for doing so. Crop yields have risen dramatically in the twentieth century, and there is no reason to believe they will do otherwise in the twenty-first century. But we have had significant technological breakthroughs (hybrid corn, e.g.) which have contributed to the plentiful food supplies of recent years. There are some who believe that breakthroughs of a comparable magnitude during the next century are not likely to occur. If they are correct, we could have difficult times ahead. This means that agricultural research should receive a high priority in the United States and

other major agricultural producing nations of the world. It means further that existing technology should be transmitted to producers in the most effective way possible. This will require extension programs much more comprehensive in their geographic and human coverage than has been true in the past. Management techniques will need to be improved too, so that more farmers will begin to exceed the yield averages which prevail in the world today.

In addition, efficient producers must be rewarded for their efforts. In the United States we have found the profit incentive to be a tremendous stimulus to production. If other countries wish to substitute differing incentives, that is their privilege. In the absence of such incentives, however, the necessary production increases simply will not occur.

Farmers in the United States and elsewhere also need a reasonable level of protection on the downside. It takes a great deal of talent and experience to manage and operate the modern farm of today. It is a tremendous waste of human resources to have that talent disappear from the agricultural scene in a sea of financial woes. I certainly do not advocate insurance against failure, in agriculture or any other enterprise. But we can moderate the financial impact of unpredictable and perhaps even uninsurable risks in the agricultural sector of any nation. This can be done through the use of target prices; governmental crop insurance programs, etc. Reasonable protections of this nature can pay big dividends in maintaining stability in agriculture.

3. Assist Lesser Developed Nations With Food Production Potential.

There is still substantial potential for dramatic increases in food production among a number of the lesser developed nations. For example, the llanos of South America, a gigantic region, could be operated much more intensively than it is today. But there are myriad problems involved in bringing these and other such lands anywhere near to full production. The capital requirements alone far exceed the discretionary financial resources presently available to these countries. Therefore, major international lending endeavors will be essential to their agricultural development.

Not only will massive infusions of capital be required for production inputs, but the infrastructure (roads, powerlines, waterwells, etc.) will have to be there too. Without these, agricultural development projects are doomed to failure.

4. Foster Economies of Scale and Production and Marketing Efficiencies.

Few nations of the world today even approach the economies of scale that are possible in modern agriculture. In many cases, this reflects deliberate public policies based on social considerations. One cannot criticize such policies, for nations are entitled to establish their own priorities. But the trade offs involved should at least be understood.

One critical trade off is that agricultural production will assuredly not be as efficient, profitable, and probably not as productive as it would be if agricultural innovations, economies of scale, and other production and marketing efficiencies were

emphasized. If and when food shortages become a chronic global problem, these nations may wish to reassess their priorities. The trade offs may become too costly, wherein economic considerations may ultimately outweigh those in the social sphere.

5. Reduce Trade Barriers. You will recall that I advocated a reduction in trade barriers in times of agricultural surpluses. I do so in times of shortage as well. Under the latter condition, one can simply not justify impediments to the free movement of agricultural goods throughout the world. Though trade barriers have been reduced over the past 30 years, much more progress has been made in industry than in the agricultural sector. Agricultural barriers abound, and all nations need to reassess their own agricultural protectionism in light of projected world food needs in the coming decades.

Putting it another way, the GATT rules on agricultural trade need to be strengthened, delineated with greater specificity, and applied with diligence and decisiveness. Present GATT rules come close to institutionalizing the beggar thy neighbor policies of agricultural trade barriers, rather than reducing or eliminating them. In the jargon of international trade, we ought to be able to do a much better job of "rationalizing" the international movement of agricultural commodities.

6. Resolve The Present Energy Crisis. Neither the United States nor any other consuming nation has yet to fully face up to the energy crisis. Unless we are prepared to do so, in a variety of ways, that crisis will be with us for many years to come. It may be grammatically imperfect to speak of a "chronic" energy crisis, but that is precisely what we will have.

If this condition prevails, it will clearly impinge upon the world's ability to feed itself. At the economic margin, all nations must make a choice between energy and food. Since the emergence of the energy crisis, that choice has been forced in the direction of energy. For us and the other wealthier nations of the world the choice is distressing, but tolerable. But for many of the poorer nations of the world, it is exceedingly painful, and could ultimately lead to much higher levels of malnutrition. The answer must be a concerted and determined effort to develop alternative sources of energy at the earliest possible date.

7. Expand Storage Capacity. Many importing nations, including the Soviet Union, have significantly expanded their storage capacity (particularly for grains) in recent years. This is a laudable objective, and should be further pursued in the years ahead. Notwithstanding my earlier point about export restraints, and the likelihood that most nations will seek to avoid such, in a crisis all bets are off. In other words, in a disaster situation where an exporting nation must choose whether to feed its own people, or share its food with the rest of the world, no government will be able to ignore the basic needs of its own citizens. Thus, it behooves all importing nations to maintain a reasonable level of food stocks at all times. Determination of that level is somewhat subjective, of course, for there are trade offs between cost and security. Nevertheless, my own judgment is that some importing

nations have traditionally maintained stocks at a dangerously low level. That is a policy they may wish to reassess in the future.

8. Use Long Term Contracts and Futures Markets. Finally, importing nations can avail themselves of innovative purchase techniques that can contribute to their own food security. Among those techniques are long term contractual commitments or the purchase of commodities on futures markets. Though these modes of operation cannot provide iron clad assurances of delivery, they are certainly preferable to placing oneself at the mercy of unpredictable supply and demand conditions, and they may be much less costly than alternative protections such as storage programs.

Long term contractual commitments, such as the one involving the United States and the Soviet Union, can bring additional stability to the food supply-demand relationships of the contracting nations, though it is possible that such arrangements will create additional instability elsewhere in the world. That is, the micro and macro effects may be dissimilar, but it surely is both desirable and proper for an individual nation to seek certain protections in its own long term supply needs. Any adverse macro effects should be dealt with on a multilateral basis.

Futures markets may well provide an even more responsive and less confining method of achieving such protection than will long term contractual arrangements. Both mechanisms are certainly deserving of consideration by public and private entities of all the major food trading nations.

Conclusion

Much more could be said. This is by no means a composite of all the actions, long term and short term, that can be taken by governments, quasi public agencies, and the private sector to deal with either food shortages or food surpluses. But I hope I have enumerated the major ones. Few of them are without controversy. But food policy is too important to have them be otherwise.

Let us have the debates, nationally and internationally, and then move forward with policies that are reasonable, rational, and responsive.

Biographies

Speakers

CLIFFORD M. HARDIN, Vice Chairman of the Board, Ralston Purina Company, St. Louis.

Before joining Ralston Purina in 1971, Dr. Hardin was Secretary of Agriculture (1969-71). He was Chancellor of the University of Nebraska from 1954 to 1969, after having served for 10 years at Michigan State University as professor and chairman of agricultural economics, Director of the Experiment Station, and Dean of the College of Agriculture. He is a member of the Board of Trustees of several organizations, including the Rockefeller Foundation, the International Agricultural Development Service, the Farm Foundation, and the American Assembly. Dr. Hardin edited *Overcoming World Hunger* (1968).

THOMAS F. EAGLETON, United States Senator from Missouri.

Senator Eagleton is Chairman, Subcommittee on Agriculture of the Senate Appropriations Committee, 95th Congress. He also is a member of the Senate Governmental Affairs and Human Resources Committees and the Special Committee on Aging. Senator Eagleton won his first elective office in 1956 as Circuit Attorney of St. Louis. He was elected Missouri Attorney General in 1960, Missouri Lieutenant Governor in 1964, and U.S. Senator in 1968 and 1974.

EARL O. HEADY, Director of the Center for Agricultural and Rural Development, and Curtiss Distinguished Professor, Iowa State University, Ames.

Dr. Heady's career has encompassed teaching, research, writing, and consulting. He has been associated with Iowa State University since the 1940's, and he has authored numerous books and hundreds of journal articles, research bulletins, etc., including *World Food Production, Demand, and Trade* (1973). Dr. Heady has received the American Agricultural Economics Association Award for outstanding research on nine different occasions. He has consulted with the Ford and Rockefeller Foundations, the AID, the OECD, the FAO, the USDA, and numerous foreign governments, and he has lectured at many U.S. and foreign universities. He is a Fellow of the American Agricultural Economics Association, the Econometrics Society, the American Statistical Association, and the American Association for the Advancement of Science.

JOHN WILLIAMS MELLOR, Director of the International Food Policy Research Institute, Washington, D.C.

Dr. Mellor joined the Institute in 1977 after serving as AID Chief Economist and Associate Assistant Administrator for Policy Developments and Analysis, Agency for International Development, since 1976. He has been associated with Cornell University for about 30 years, and now is on leave as Professor, Department of Agricultural Economics, and Director of the Program on Comparative Economic Development. He was a Social Science Research Fellow and a Fulbright Fellow. Dr. Mellor has been a consultant at various times for the World Bank, the FAO, and the Rockefeller Foundation. Among his many books and publications is *The Economics of Agricultural Development* (1966).

AMBASSADOR ALAN WM. WOLFF, the President's Deputy Special Representative for Trade Negotiations.

Ambassador Wolff joined the Special Trade Representative's Office (STR) in 1973 and became its general counsel in 1974. After passage of the Trade Act of 1974, he headed the U.S. delegation to the multilateral trade negotiations in Geneva. In 1975 and 1976, Ambassador Wolff served as chief U.S. negotiator in several bilateral trade talks involving key imported products. Before joining STR, he was a senior attorney at the Treasury Department dealing with international affairs and was responsible for the Department's preparation for the multilateral trade negotiations.

HOWARD W. HJORT, Director of Economics, Policy Analysis, and Budget, U.S. Department of Agriculture.

Mr. Hjort, as the chief economic advisor to the Secretary of Agriculture since early 1977, is responsible for three USDA agencies: the Economic Research and Statistical Service; the Office of Budget, Planning, and Evaluation; and the World Food and Agricultural Outlook and Situation Board. He served the USDA from 1956 to 1969, becoming director of the USDA's program planning and analysis staff, then accepted a Ford Foundation assignment to work with the Indian government in New Delhi. Mr. Hjort returned to the United States in 1972 to become a partner in the agricultural consulting firm of Schnittker Associates in Washington, D.C.

HERMAN DE LANGE, First Secretary (Agriculture) of the Delegation of the Commission of the European Communities.

Mr. deLange, a native of the Netherlands, has been associated with the EEC since 1959, when he joined the North American desk of the External Relations directorate and was a member of the Dillon Round negotiating team. He became an official in the Agricultural directorate in 1963 and was a member of the Kennedy Round negotiating team. Mr. deLange was appointed to this present assignment in Washington, D.C., in 1975.

D. GALE JOHNSON, Provost and **Eliakim Hastings Moore** Distinguished Service Professor, University of Chicago.

Dr. Johnson has been associated with the University of Chicago since 1944 in a wide-ranging teaching, research, writing, and consulting career. His extensive publishing in international agricultural trade and world food issues has reached a broad audience. Among his recent books is *World Agriculture in Disarray* (1973). Dr. Johnson was president (1964-65) and is a Fellow of the American Agricultural Economics Association. He was president (1962-75) of the National Opinion Research Center, and served the National Research Council of the National Academy of Science in various capacities. As a consultant, he has served the OPA, the Departments of State and Army, the TVA, the AID, the Special Representative for Trade Negotiations, and numerous national taskforces, committees, and commissions.

TILFORD C. GAINES, Senior Vice President and Economist, Manufacturer's Hanover Trust Company, New York.

Dr. Gaines began his career in 1949 as an economist with the Federal Reserve Bank of New York, assigned to the Research Department and later to the Securities Department. In 1961, he joined First National Bank of Chicago to head the Government Bond Department. Dr. Gaines was appointed to his present position in 1967. He has published numerous articles and papers on fiscal and monetary matters. He is chairman of the Committee on International Monetary Relations of the U.S. Council of the International Chamber of Commerce.

CLARENCE D. PALMBY, Vice President for Public Affairs, Continental Grain Company, New York.

Mr. Palmby was Assistant Secretary of Agriculture for International Affairs and Commodity Programs from 1969 to 1972, before joining Continental Grain. Before his USDA appointment, he was executive vice president of the U.S. Feed Grains Council, developing extensive first-hand knowledge of the grain, feed, and livestock industries in the major export markets for U.S. commodities. Mr. Palmby served from 1953 to 1961 in various capacities with USDA.

CLAYTON YEUTTER, President Designate (July 1, 1978) of the Chicago Mercantile Exchange, now senior partner of the law firm Nelson, Harding, Yeutter, Leonard & Tate, Lincoln, Nebr. (with offices in six other cities).

Dr. Yeutter was the President's Deputy Special Representative for Trade Negotiations from mid-1975 to early 1977. Before that appointment, he had served USDA as Assistant Secretary for Marketing and Consumer Services and, later, as Assistant Secretary for International Affairs and Commodity Programs. For two years ending in late 1970, Dr. Yeutter was director of the University of Nebraska mission in Colombia — the largest agricultural technical assistance program in the world at that time. From 1960 to 1966, he was on the agricultural economics faculty at the University of Nebraska.

Discussants

BELAI ABBAI, Food Policy Advisor, World Bank, Washington, D.C.

Mr. Abbai has been in his present assignment for two years, after serving more than 20 years in various positions with the Ethiopian government and the United Nations Economic Commission for Africa (1960-67). Before coming to Washington, Mr. Abbai was most recently Minister of Land Reform and Administration, having been Minister of State and Vice Minister of Planning in Addis Ababa. Earlier, he served the Ministries of Commerce and Industry, Agriculture, and Finance.

ARTHUR MEAD, Senior Economist, North American Office, Food and Agriculture Organization of the United Nations.

Mr. Mead was appointed to the Food and Agriculture Organization in 1976 after a long career with USDA. He was Assistant Administrator of the Public Law 480 Food for Peace program for many years and served as chairman of the PL 480 Interagency Committee for eight years.

JIMMYE S. HILLMAN, Professor of Agricultural Economics, University of Arizona.

Dr. Hillman has been associated with the University of Arizona since 1950. He was president of the Western Farm Economics Association (1966-67) and the American Agricultural Economics Association (1970-71). He has published extensively on international agricultural trade. Dr. Hillman has consulted with numerous U.S. and international agencies, including the USDA, the OAS, the AID, the FAO, and the World Bank, as well as with the National Cotton Council and the Rockefeller Foundation.

TIMOTHY E. JOSLING, Professor, Food Research Institute, Stanford University.

Dr. Josling was appointed to the Institute position earlier this year. A native of England, Dr. Josling was Lecturer, then Reader, in economics at the London School of Economics and Professor of Agricultural Economics and Management at the University of Reading (England). In the United Kingdom, he was Economic Advisor to the Secretary of State for Prices and Consumer Protection and to the House of Lords Committee on the EEC.

DON PAARLBERG, Professor Emeritus, Purdue University.

Dr. Paarlberg has divided his professional energies between teaching and research at Purdue and Federal government service. He has held appointments from three Presidents, having been Assistant to the President, Coordinator of the Food

for Peace program, Assistant Secretary of Agriculture, and Director of Agricultural Economics. He has been economic advisor to four Secretaries of Agriculture and has published widely on agricultural economics topics.

BENJAMIN S. JAFFRAY, Vice President and Treasurer, Cargill, Inc., Minneapolis.

Mr. Jaffray joined Cargill in 1953, later serving as regional manager in Norfolk, Va., and Chicago. He was named assistant vice president in 1961, and in 1968 went to Geneva, Switzerland, where he served with Tradax, Cargill's trading affiliate. Mr. Jaffray returned to Minneapolis in 1969 as assistant vice president — finance, was elected treasurer in 1971, and vice president in 1975.

HAROLD F. BJARNASON, Senior Economist, Canadian Wheat Board, Winnipeg.

Dr. Bjarnason has been with the Canadian Wheat Board since 1967. In 1970 he was appointed General Director of the Board's Market Analysis and Development Department with responsibility for world grain market analysis and Canadian export strategies. From 1972 to 1975, he established and managed the Board's Brussels office. He returned to Winnipeg as Assistant Marketing Coordinator of International Policy and Planning, and was appointed Senior Economist in 1976.

Moderators

DURWARD B. VARNER, Chairman of the Board of the University of Nebraska Foundation, Lincoln.

Mr. Varner has been associated with the University of Nebraska since 1970, serving first as Chancellor, then President (1972-76). He was Chancellor of Oakland University, Rochester, Mich., from 1959 to 1970, after having been assistant professor, Director of the Extension Service, and Vice President at Michigan State University.

MORTON I. SOSLAND, Editor and Publisher, *Milling & Baking News*, Kansas City, Mo.

Mr. Sosland has been with *Milling & Baking News* for more than 30 years, and has been its editor and publisher since 1968. The weekly publication has been at the center of world food developments for many years and its policy recommendations are widely read. Mr. Sosland often speaks on world food issues.

ERNEST T. LINDSEY, President and Chief Executive Officer, Farmland Industries, Inc., Kansas City, Mo.

Mr. Lindsey joined Farmland Industries in 1963 and became president in 1967. Farmland Industries is a major regional agricultural cooperative serving more than 500,000 farm families in 15 states with a volume of more than \$3.1 billion. He is a member of the Board of Trustees of Midwest Research Institute.

Hosts

ROGER GUFFEY, President, Federal Reserve Bank of Kansas City.

Mr. Guffey joined the Federal Reserve Bank of Kansas City in 1968, and became president in 1976. Before joining the Bank, Mr. Guffey was a partner in the firm Fallon, Guffey, and Jenkins in general banking and corporate practice in Kansas City (1965-68). He previously had been a partner in the firm of Knipmeyer, McCann, and Millett in general corporate and related trial practice in Kansas City (1958-65).

HAROLD W. ANDERSEN, President, Omaha World-Herald Company, and Chairman of the Board, Federal Reserve Bank of Kansas City.

Mr. Andersen was appointed a director of the Federal Reserve Bank of Kansas City in 1973. He became deputy chairman of the board of directors in 1975, and chairman and Federal Reserve Agent in 1977. In May 1978, he was elected president of the International Federation of Newspaper Publishers.

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