A FOOD POLICY BASEBOOK

YOUR FOOD

STEERING COMMITTEE

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CONTENTS

The publication deals with the food situation, issues and some of our policy choices. It is intended to be used by xtension specialists, field staff, and lay leaders in conducting food policy education programs. The development was uided by a multi-disciplinary national steering committee. Assisting in the project were the National Public Policy ducation Committee, Extension Service-USDA cooperating with the various state extension services and Farm oundation.

PREFACE

Food, hunger, and prices are on-going problems at home and abroad. People are wondering if a general food shortage has begun to grip the planet. Who will get the food? Sharing our abundance with the less fortunate at home and abroad is being widely discussed. In addition, people ask about the quality and safety of our food. The concentration of power in the food system is under public scrutiny. Facts are needed to help make decisions about the future quantity and quality of food. These and associated issues are discussed in *Your Food: A Food Policy Basebook*. The basic purpose is to provide information on the food situation so that extension specialists, field staff, and leaders may more effectively conduct food policy educational programs.

Food concerns will remain in the forefront with either abundant harvests or with critical grain shortfalls. The origin and the intensity of the public concern whether we have shortages or abundance will vary from food prices to farm prices and a host of things in between. The world and domestic food issues of: will there be enough, what will it cost, who will get it, how will it be shared, its quality and safety, control of the food system, and will greater foreign technical aid by provided will be with us for a long time. This is because the U.S. and the world is faced with immediate food transfer problems, needs to expand food supplies in many less developed nations in the next decade, and long run population problems.

Your Food includes topics of broad concern to consumers and to those interested in farm production, processing, and the distribution of food. Food policy—laws, programs, regulations, institutional arrangements, and court decisions—some way or another, effects everyone. Each element of the United States food policy does have (or should have) a purpose. Taken in their entirety, U.S. food policy objectives are identified as:

1. Efficiently produce an abundant, safe, and wholesome supply of food for U. S. consumers,
2. Provide for humanitarian needs at home and assist in meeting the needs abroad by sharing our abundance,
3. Maintain and increase the U. S. role in expanding world markets,
4. Maintain our dependability as a world food supplier.
5. Increase farm incomes and improve rural communities.

There may be other objectives, but in assessing the various facets of food policy the conflicts become apparent. The function of the political system is to help design programs, resolve the conflicts, and to arrive at a concensus. The function of extension staff and leaders is to help people understand the food situation and the policymaking process so they can influence decisions. The first five chapters are devoted to the domestic and world situation and the concluding chapter is devoted to the policymaking process.

The goal in *Your Food: A Food Policy Basebook* is to provide relevant information on major areas of concern so people can better assess the food situation. The attempt is to provide some guidance in thinking about and evaluating the great diversity of opinions and solutions proposed.

People wonder if there will be enough food for the entire planet in the years to come. The authors describe the world food picture as a delicate balance between "just enough" and "much too little," recognizing that some people may have "too much."

The chapter highlights the forces influencing food production and shaping its use around the world. It looks at the recent past to see where world food output has been inadequate and in what form the food supply problems occur.

It summarizes some studies projecting future food needs and examines why people see widely different futures for the world.

The authors identify some questions and discuss some approaches for the U. S. in facing the world food situation. They point out that everything cannot be done at once.

1. WILL THERE BE ENOUGH?

James P. Houck, University of Minnesota
Wallace Barr, The Ohio State University

"A hungry man is not a free man."
– Adlai Stevenson, 1952

Across the nation and throughout the world people are very uneasy about the world food situation. They want the facts; they ask how bad the situation is today and what will it be like tomorrow. People want to know where and why malnutrition and hunger exist. They question if, when, and how the world food crisis will touch them and their families. They wonder if the shortages and high food prices of recent months and years foretell of a general food shortage soon to grip the entire planet.

These questions and dozens more tumble over each other in a bewildering array. Government officials, scientific experts, and economists often add little clarity to the situation. They sometimes contradict each other and offer viewpoints that illuminate only a portion of the whole picture.

Appreciation for counsel is extended to Jimmye S. Hillman, University of Arizona, Brice K. Meeker, Foreign Agricultural Service, United States Department of Agriculture, B. H. Robinson, Clemson University, Doris Wetters, Michigan State University, Willard W. Cochrane, Lee R. Martin, Malcolm Purvis and Phillip Raup, University of Minnesota, Norman Rask and Richard L. Meyer of The Ohio State University.

THE FORCES AT WORK

A large step forward in understanding both facts and theories about world food problems can be made by separating the forces at work into four major categories: supply vs. demand, and short-run vs. long-run. Neither this four-way partition nor the main thrust of the discussion depends much upon a country's social or economic system. The same global forces affect all societies—whatever their blend of capitalism, socialism, state control, or private enterprise. How they deal with these forces differs, but the problems are similar.

Some have pictured the world food situation in many countries as a delicate balance between "just enough" and "much too little." Obviously the picture is hardly this simple. We know, for example, that for millions and millions of people in Asia and Africa the picture is "much too little" all of the time. In any case, this balance idea is the organizing principle in this section.

A picture of the food supply/demand balance for a self-contained society or country is shown in Figure 1. The visual impression is meant to be a simple balancing scale swinging about a fulcrum.

The Food Supply-Demand Balance in Commercial Markets

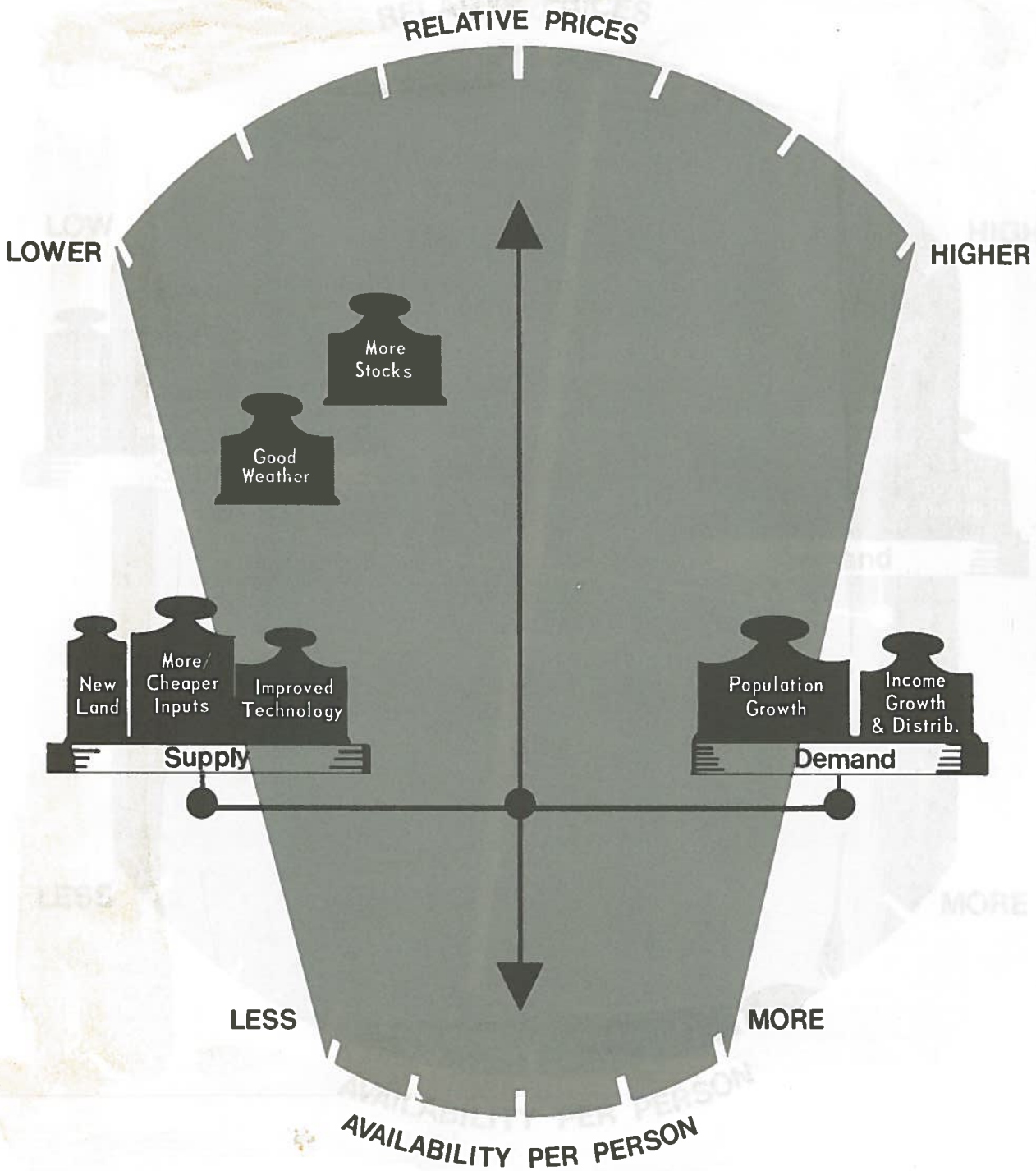


Figure 1

The Long View

On the right side of the scale the major long-run forces influencing food demand and consumption are depicted as weights. These are (1) population and (2) income and the distribution of that income.

On the left side of the scale, the weights represent the major forces influencing food supplies. These are (1) agricultural technology, (2) prices and availability of non-farm inputs like fertilizer, fuel, irrigation water and machinery, and (3) the availability of arable land. Oceans and rivers also provide part of man's food. Although not shown in Figure 1, these resources provide weight to the left hand side of the scale.

Government policy and social institutions overlie the whole picture. They are considered constant for the drawing of Figure 1 but changes in these factors can alter significantly the forces in this balance.

If, over a long period of time, both sides of this scale are in balance, the indicator needles for food prices and food availability per person will hold steady. This kind of balance occurs when the growth in demand (need plus money) is matched by advances in supply. In this particular circumstance, the top indicator needle will show no change in the cost of food relative to other things people need and want to buy with their incomes. Similarly, the lower indicator needle will show no change in the amount of food available per person in the society. Things will be in balance. The balance may be good or bad from a nutritional point of view, but the society is neither gaining nor losing ground in its average consumption/production balance. However, the state of balance shown this way tells us nothing about the way the food supply is distributed among people and classes in the society. Nor does it tell us who produces the food or how it is produced. It also tells nothing about the amount or type of resources used and how benefits are distributed among producers.

If the total weight on one side of the scale grows less rapidly than the other, then the needles indicating price and consumption will begin to move. Imagine first that demand growth begins to outweigh supply growth.

The right hand tray in our scale moves down. Shortages begin to occur and relative prices of food increase as the price needle swings to the right and the per person availability needle swings left. This tendency is stronger if the main driving force behind the demand growth is population expansion. The availability of food to persons whose incomes increase less than the average will fall.

If supply can respond to higher prices or other production incentives, then supply growth may match increased demand. If this occurs, the total output of food expands, the indicator needle on per capita availability swings to the right, and the relative price indicator moves toward lower levels.

However, if the supply system does not respond with more production, then we have higher relative prices of food and lower levels of per capita consumption. This is feared by many pessimistic observers, though they may place differing weights on the various factors. Optimists see the left side of the scale growing in weight to balance the demand growth occurring on the right side. We will look at these visions in a later section.

It is possible to view the supply/demand scale in the context of a society which can either import and/or export food. Imports are an added weight to the left side and will bring prices down and increase per capita availability. On the other hand, exports are an increased weight on the demand side which will decrease supplies and pull prices up.

The Short View

Picturing the food supply/demand balance as a scale is an extreme simplification, even in the long-run. The concept becomes even more elusive when considering the short-run of one, two, or five years. Forces are added to the picture which complicate the balance idea. Political and social changes are at work and economic policies change suddenly. These changes can tip the scale one way then another.

Two important short-term forces are illustrated in Figure 1: year to year weather variation and stock level changes. They are shown as two extra weights which can be quickly added to or subtracted from the supply side of the scale. Their variability from year-to-year can drastically alter the short-run situation.

Imagine that the "good weather" weight is dropped onto the scale one year then quickly removed the next. Even if the scale was in a long-run balance, this two-way shock will send the price and consumption needles bouncing around their dials. First low prices and good supplies would occur. Then high prices and shortages would quickly follow. With no ability to withdraw or add to reserve stocks, the system might be quite unstable due to erratic weather or other natural disasters.

Notice that the fulcrum around which the show scale swings is positioned so the price indicator is by far the longer of the two needles. The picture was deliberately drawn this way to illustrate the economic "inelasticity" of the entire food supply/demand system. "Inelasticity" means that small changes in the supply/demand balance can set off dramatic swings in farm and food prices. Its chief causes are (1) the status of food as a biological necessity for the survival and well-being of man, and (2) the inability of food production to respond quickly to sudden changes in relative price signals or central direction.

Some Important Linkages

We have pictured and described our abstract supply/demand balance as if the major forces are independent of each other. However, we know that many of these forces are woven together in the complex web of human and biological interaction. For instance, income growth and its distribution affect population growth. The level and behavior of relative prices affect the development and application of technological change in agriculture. The pace and direction of technical change alters the price and utilization of land, water and other farm inputs like fuel and fertilizer. Man deliberately accumulates stocks and even strives to change the weather for his benefit.

It would be foolish to ignore these intersecting paths of influence in planning the research and policy changes needed to deal with food and agricultural issues.

THE PATH TO THE PRESENT

In this section, we view the past in order to grasp the essence of the situation that seems to grip us today. Two perspectives are important. One concerns the longer sweep of world food production from the early 1950's to the early 1970's. The other is the sequence of events in the past 2-3 years which has delivered us to the current setting.

The Longer Sweep

Most people find it difficult to think in terms of billions of bushels or millions of tons. These numbers are almost meaningless in our daily experience. Even food calories per person per day is not an everyday idea for most of us. Yet when these numbers are examined for various regions, countries, and major classes of food commodities consumed, much is revealed about the adequacy of diets around the world. Table 1 is a summary of calorie intake by food classes. It tells us who ate *what* and *how much* during a two-year period in the middle 1960's. Notice especially the dietary differences between "developed" and "less developed" nations and regions. These differences involve both the total caloric intake and the distribution of these calories from major food groups.

Deciding who is and who is not less-developed is becoming more difficult. In recent years, several oil-producing nations, traditionally regarded as less-developed, have accumulated huge balances of foreign exchange from oil exports.

Figure 2 illustrates the total food production and population experience of the past 20 or more years. These charts are expressed in percentage terms so relative changes are highlighted and widely different kinds of food products and amounts can be compared. The percentages refer to a base in which the average of 1961-65 equals 100.

The notes on Figure 2 are generally self-explanatory. A point worth underscoring is that, in a relative sense,the less-developed world performed very well in terms of total agricultural growth. Over this 20-year period, the less-developed world increased food production on the order of 2.5 to 3.0 percent annually, keeping pace with the most sophisticated agricultural industries in the developed world.

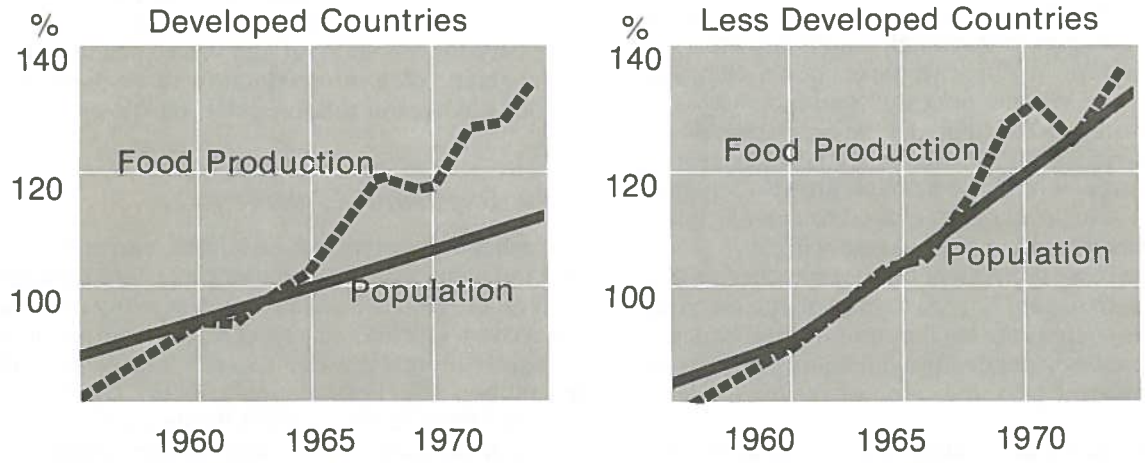
Unfortunately, this achievement only kept pace with the similar population growth rate in these countries. Per capita food production gained very little, if at all, in the less-developed world over the 20-year period.

The large expansion in per capita food production in the developed nations (Figures 2 and 3) was not all consumed as more pounds of food. Some of it was shipped to the less-developed world as both commercial and food-aid exports, but much of the increased crop production was fed to livestock.

FOOD PRODUCTION AND POPULATION

Food production has grown steadily over the past two decades. Growth in the developed countries has roughly paralleled that in the less developed countries.

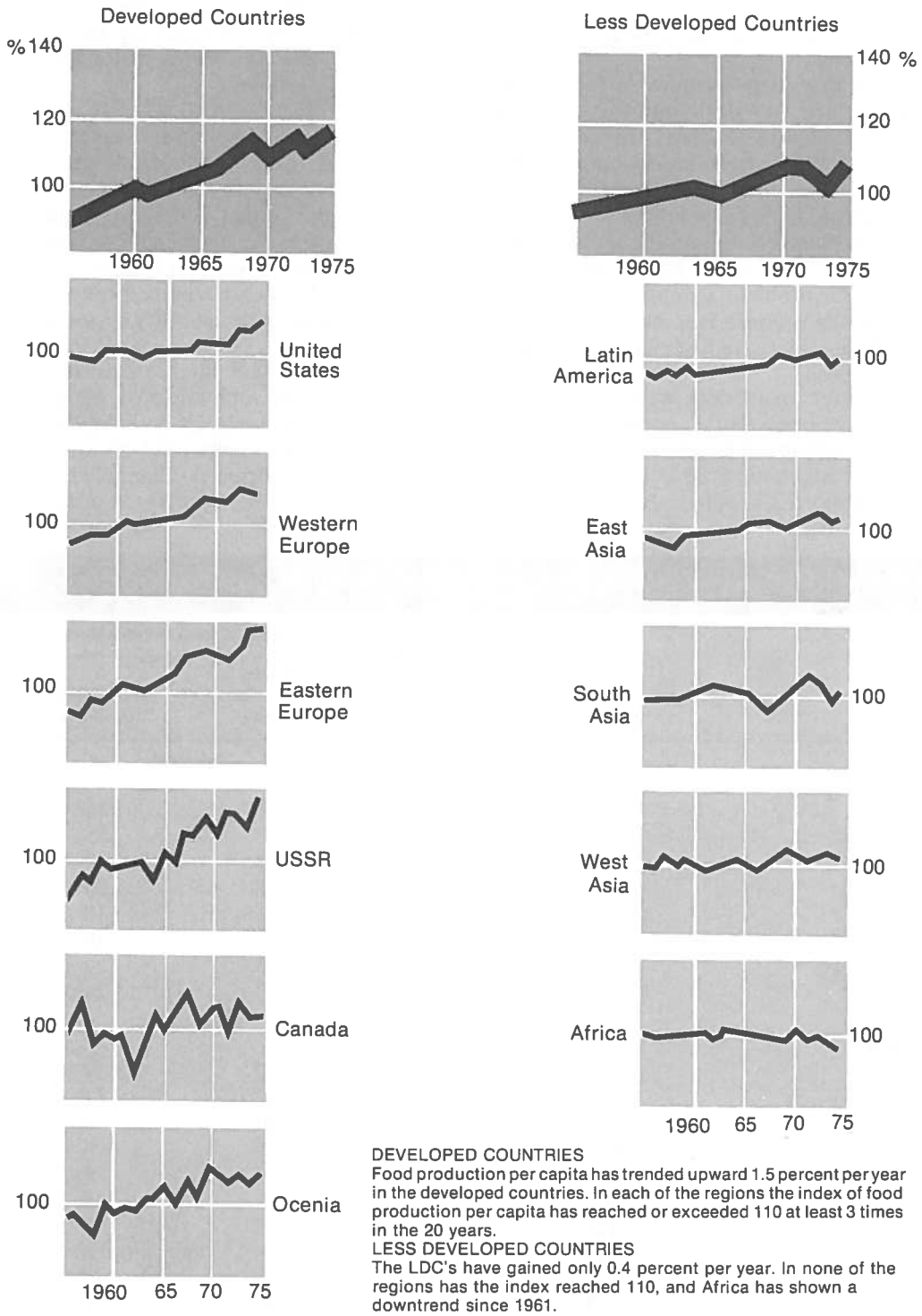
Population has grown faster in the less developed countries.



Peoples of the developed and less developed country groups have not fared equally from the roughly equal growth in food production. In the developed countries production has increased much faster than population, boosting production per capita. In the LDC's population gains have absorbed nearly all of the production increase; production per capita has improved only slightly.

FIGURE 2.

Figure 3: Food Production Per Capita



DEVELOPED COUNTRIES
Food production per capita has trended upward 1.5 percent per year in the developed countries. In each of the regions the index of food production per capita has reached or exceeded 110 at least 3 times in the 20 years.

LESS DEVELOPED COUNTRIES
The LDC's have gained only 0.4 percent per year. In none of the regions has the index reached 110, and Africa has shown a downtrend since 1961.

U.S. Department of Agriculture
Neg. Ers 427-73 (12) Economic Research Service

Another look at the make-up of diets shown in Table 1 confirms the importance of livestock products (meat, eggs, fish, and dairy products) in the developed world. It also reveals why many people in the United States are concerned about our heavy use of grain as animal feed. We utilize over one ton of grain per person annually compared to 400-450 pounds in many less developed countries. This is why some are proposing fundamental dietary changes in the developed world as a way of redressing global food consumption imbalances.

Nutritionists know that diets in many less-developed nations and regions are too deficient for sustained good health and human development. Since average per capita consumption levels have improved little since 1956, it must be true that many more humans are living at or below adequate dietary levels than ever before. There are many more people living on the globe than 25 years ago and nearly a billion more people live in less-developed nations. The problem is aggravated in most less developed countries because income growth, which is partly translated into increased demand for food, is very unevenly distributed.

With little improvement in average per-capita food production in the less-developed world, output fluctuations can be disastrous for millions of people on the knife-edge of "just enough" and "much too little." This is especially true if only meager imported supplies are available from the developed areas.

Figure 3 also illustrates how per-capita food production has fared in major geographic regions of the world. Optimists can see a slight improvement in Latin America and East Asia over the period and not too much fluctuation from year to year. However, year-to-year output fluctuation in South Asia is extreme, especially recently. This is the monsoon-dependent region which includes that densely-populated sub-continent of India, Pakistan, and Bangladesh where emergency food-aid has been important to tide this region over major harvest failures, such as occurred in 1966-67.

Africa shows a downtrend during the recent half of the period (Figure 3). Much of this deterioration is centered among the nations in the Central African region called the Sahel. Here drought coupled with heavy population and livestock pressure on meager agricultural resources has been disastrous. Another look at Table 1 shows that the peoples of Africa are among those who can least sustain a drop in the average quantity or quality of their diets.

Figures 2 and 3 illustrate food *production* changes among regions and nations. Food production is not necessarily the same as consumption or availability for the growing per-capita food production of the wealthier, developed countries is channeled *via* trade and aid to the less-developed countries in order to supplement their per-capita needs.

Table 1. Total calories per person per day and percent of total from four major calorie groups, 1964-66 average.

Country	Total daily calories	Percent of total calories from: Cereals and other carbohydrates	Fruits, Vegs. & Pulses	Livestock products	Fats & Oils
		percent			
DEVELOPED					
North America	3,155	40	9	34	17
Australia & Zealand	3,192	46	7	35	12
U.S.S.R.	3,182	70	4	17	9
EC-9*	3,111	46	8	28	18
East Europe	3,080	65	5	18	12
Japan	2,429	71	12	10	7
Other Western Europe	2,897	51	10	22	17
AVERAGE	3,043	55	7	24	14
LESS DEVELOPED					
South America	2,276	68	7	17	8
Mexico & Cent. America	2,425	69	12	11	8
West Asia	2,316	74	10	8	8
China	2,045	80	9	8	3
East Asia & Pacific	1,969	82	9	5	4
South Asia	1,975	77	12	5	6
Southeast Asia	2,121	82	8	7	3
North Africa	2,290	77	8	7	8
Africa South of Sahara	1,730	80	10	5	5
AVERAGE	2,097	77	10	8	5
WORLD	2,386	69	9	14	8

Source: FAO Food Balances 1964-66.
*European Community (original 6 nations plus United Kingdom, Ireland, and Denmark).

Trade in Grain

Between 35-40 percent of the world's annual grain crop is grown in the developed world. The less-developed nations import only 5-8 percent of their grain consumption either as commercial trade or through food aid assistance. It is often a crucial 5-8 percent, but still a small part of the total.

There are complex political, economic, and physical reasons for a low amount of grain shipped to less-developed countries. The less-developed countries are not wealthy, so they cannot finance massive imports. They cannot compete for grain with wealthy importing nations like those in Europe and Japan. Non-commercial transfers of food have been relatively small because developed nations have been reluctant to pay the monetary and resource costs involved and because many less-developed nations have set a high priority on food self-sufficiency as a political, social, and economic goal. Thus, many shun food aid except in dire emergencies.

The U. S. has provided over four-fifths of all world food aid at a value of about $25 billion in the last two decades. There are limitations to how far Western political democracies will go in providing tax-supported welfare beyond their borders. Most Western nations have a high proportion of their national budgets devoted to domestic welfare programs, including food.

There are also physical constraints limiting the amount of food aid that can be moved. For example, India cannot handle more than 10 million metric tons per year through existing port facilities. In Sahel there are extreme difficulties of moving food from ports to interior points.

THE CURRENT PICTURE

Thousands and thousands of words have been written and spoken about the current situation. Almost anything said is a gross simplification, but the following circumstances which have piled on top of each other since 1971-72 are among the leading culprits:

1. Bad weather in some important production areas caused a recent decrease in the output of all three classes of grain: wheat, rice, and coarse grains. Much of this bad weather was centered in highly-populated areas of the Indian sub-continent and Africa. Also, the U.S. and Australia experienced adverse weather which reduced supplies.

2. Large grain inventories were not available anywhere for world-wide sale or distribution. The United States, Canada, and Australia reduced inventories through the 1960's by idling land.

3. Soviet Russia and the People's Republic of China imported large quantities of grain through commercial markets.

4. Wealthy grain importing nations demanded more grain, much of it for livestock feed. Devaluation of the U.S. dollar heightened this commercial demand.

Between 35-40 percent of the world's annual grain crop is grown in the developed world.

5. The world experienced price inflation and shortages of non-farm production inputs such as fertilizers and fuels.

When events like these pile on the fragile international food economy, the nations and people who bear the heaviest adjustment burden are those who can least afford it.

Are these events simply another intermittent episode of adverse fluctuation against that knife-edge balance which soon will be regained? Or have we come to the beginning of the end for much of mankind in the grim race between population and food?

Trends and Projections

Four pieces of statistical research form the basis for much of the debate and discussion in the United States about the world food crisis. These publications merit serious study. Other studies are available, but typically draw on the same basic data used in the following reports:

1. Food and Agriculture Organization of the United Nations, *Assessment of the World Food Situation–Present and Future*, United Nations World Food Conference, Documents, Rome, November, 1974.

2. U.S. Department of Agriculture, *The World Food Situation and Prospects to 1985, Foreign Agricultural Economic Report No. 98*, ERS-USDA, Washington, D.C., December, 1974.

3. University of California Food Task Force, *A Hungry World: The Challenge to Agriculture*, Division of Agricultural Sciences, University of California, Berkeley, California, July, 1974.

4. L Blakeslee, E. O. Heady, and C. F. Framingham, World Food Production, Demand, and *Trade*, Iowa State University Press, Ames, Iowa, 1973.

Fortunately, all of these studies come to similar conclusions about the world food picture until 1985. All are based on historical trends corrected for plausible alternative future conditions. The detailed picture beyond 1985 appears too murky to predict because of problems of projection and prediction based on past and current trends.

Table 2 is a summary of food demand and supply projections to 1985. World food demand is expected to grow by 2.4 percent each year during this period. Of this total, about 2.0 percent will come from annual population growth and about 0.4 percent will come from income growth as translated into food demand. These total demand growth rates have a certainty about them not matched by production growth rate projections. The world supply of food is projected to grow by 2.7 percent per year.

So, as one USDA official has said, "For the next decade or so the probability is good that world food production, in total, will keep a half step ahead of population growth, but there will be times and places of critical shortage."

If the world were one society and one market, these projections would suggest that relative food prices might decrease and per capita food availability might increase slightly. However, there are wide differences in projected demand and supply around the globe.

The less-developed countries will experience a chronic tendency of demand growth to outpace supply growth in the coming decade. If there is no increase in the availability of supplies from outside, average diets will drift below the meager levels shown in Table 1 and relative food prices will continue to rise. The less-developed regions in which these trends are most fearful are Africa and the Far East. The 1985 grain shortfall in the less-developed world can be computed. The import requirement will triple from 25 to 78 million tons by 1985 if per capita use is to be maintained. Import requirements in the less developed world would amount to 10-12 percent of internal production rather than the current 5 percent in order to maintain per capita consumption levels.

On the other hand, production growth in the developed world is projected to outrun demand growth. Incidentally, the USDA's projections for the developed nations do not reflect this imbalance since major grain exporters are assumed to prevent grain surpluses from accumulating by means of policy changes. The potential production is possible given adequate profit incentives unless the fuel and fertilizer situation deteriorates significantly and productivity in agriculture fails to keep pace.

Even so, recent USDA estimates suggest the following production increases are feasible in the United States by 1985 through a combination of more land and higher yields.:

Product	Potential Increase in U.S. Output Between 1973 and 1985 percent
Corn	62
Wheat	35
Soybeans	44
Rice	100
Beef	59

TABLE 2. Projections of food demand and extrapolations of food production to 1985

	Volume growth rates (percent per annum)		Volume indices (1969-71 = 100)	
	Demand	Production	Demand	Production
Developed countries	1.5	2.8	128	151
Developing market economies	3.6	2.6	170	146
Africa	3.8	2.5	176	145
Far East	3.4	2.4	166	143
Latin America	3.6	2.9	170	152
Near East	4.0	3.1	180	157
Asian centrally planned economies	3.1	2.6	158	146
All developing countries	3.4	2.6	166	146
World	2.4	2.7	144	150

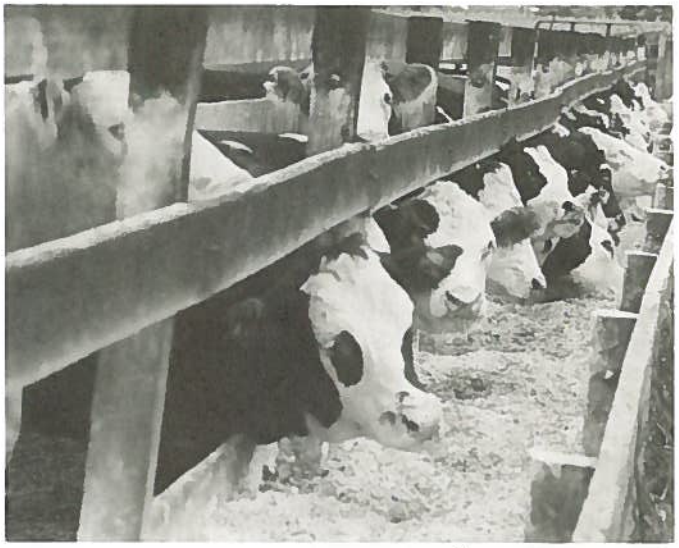
Source: Food and Agriculture Organizaiton, United Nations (1974).

If the average adequacy of diets in the less-developed world are maintained, food needs must be met from the developed world on a sustained basis and in volumes three times larger than anything experienced in previous history. Although the actual outcome may be some combination, three separate scenarios are implied by these projections:

1. Less-developed countries will be able to increase commercial food imports sufficiently to overcome major dietary deterioration. General economic growth will permit it.
2. The developed nations will offset the short falls in food production through sustained food aid transfers and/or transfers of financial aid.
3. If neither commercial trade or aid is forthcoming in sufficient volume, the dietary erosion, starvation, and increase malnutrition suggested by Table 2 will come to pass.

The researchers in each of these studies also emphasize the potential for sudden change—for feast or famine.

It is possible these studies could be completely wrong in either direction.This will happen if important changes in the world food picture have not been captured adequately in these systematic projections.



U. S. output of beef could increase by 60% between 1973 and 1985.

OTHER VIEWS AND PREDICTIONS

Experts in economics, agricultural science, food technology, sociology, demography, medicine, and climatology are having their say about the world food picture. Many are concerned about the coming 2-3 years, but some are trying to peer ahead to the year 2000 and beyond. Using the projection studies as a basis of comparison, some are relatively optimistic and many are quite pessimistic.

Optimistic Views

A few optimists exist on the demand side, where the main focus is on population growth rates. Some visualize major technical advances in birth control and contraception. They see successful programs emerging to implement them in poorer nations where population growth rates now exceed 3.0 percent per year. Even these optimists agree population control is a long-run solution. Population control can have little impact on food demand growth until well beyond 1985.

On the supply side of the scale, agricultural scientists and food technologists are optimistic. Traditionalists see advancing production technology based on new seeds, fertilizers, and pest control methods. They see deserts being irrigated and new technology being developed for cheap desalinization of sea water.

Some see exotic food sources as a sensible solution to world hunger problems. Exploitation of ocean resources and synthesis of human nutrients from previously inedible organic compounds are often mentioned.

Optimists view mankind's struggle with his food problem hinging upon technological innovations, biological discoveries, and social change. They point out that centering attention on food aid policies of the developed world diverts attention to the wrong thing. They believe population control and agricultural production policies of the less-developed countries are the central issue and hold the surest solutions.

Pessimistic Predictions

The demand side. Many pessimists are overwhelmed by population growth rates based on historical trends, especially in the years beyond 2,000 A.D. It frightens many to consider the difference between population growth rates and food growth rates and to speculate about potential social changes. At current growth rates, world population will double by about 2,000 A.D. By 1985, 91 of every 100 babies born will begin life in less-developed lands. By 2,000 A.D., this will increase to 93 of 100.

A further pessimistic argument on the demand side centers on uneven growth rates in income and wealth between nations. Income growth in Western Europe, Japan, the USSR and, to a lesser extent, North America, will provide consumers with money to buy larger amounts of meat and other livestock products. This phenomenon will operate to increase relative prices of feedstuffs, food grains, and oilseeds. Supplies of these commodities will be preempted from low income people in poor nations through the functioning of international markets based on commercial demand.

The supply side. Most pessimists dismiss ideas of new and exotic food sources. They consider bringing much new land into farm production as idealistic because of the problems of land reform and social change. They argue that major technical discoveries in production are not waiting in the wings, especially innovations that can be plugged into traditional agricultures of less-developed nations.

In the pessimistic view, these problems will be intensified by emerging shortages and continuing crises in fertilizer, petroleum, and other fossil fuel markets. Rapidly rising prices for almost all other non-farm, industrial inputs into agriculture further dampen production incentives. This is vexing because the heart of much technological progress in food production in recent years, including the Green Revolution of the late 1960's, involved heavy application of these non-farm products.

A number of weather experts now believe the planet is moving into a cooling phase. If this cooling phase causes a long-run climatic change, serious problems may be in store for food production in much of the world. Season-to-season and year-to-year fluctuations of temperatures and rainfall also may be increasing as the cooling phase develops. If this is so, past production trends and technological improvements, generated in the presence of basically good weather, may be in serious jeopardy as we move toward 1985 and beyond.

Toward 2000 A. D.

Careful thinking about mankind's future requires a synthesis of food problems, natural resource problems, energy problems, general economic conditions, and world political issues. From the vantage point of the middle 1970's, this kind of speculation is generally pessimistic.

The central argument in several of these long-run views involves the interaction of divergent population growth rates among nations, food and resource scarcities unevenly distributed, and an ever-widening economic gulf between rich and poor nations. Unless offset, the interplay of these forces suggests the inevitability of growing social and economic disarray leading to military clashes and guerilla warfare among nations and people. Ultimately the world's social and political order will be restructured.

It is almost inescapable that more than 90 percent of the world's population growth in the next 50 years will occur in the less-developed world. Food production and economic activity in the less-developed world will not expand rapidly enough to fight growing poverty, widespread hunger, and famine. The wealthy nations will be unwilling and generally unable to provide offsetting food aid and financial assistance on a sustained basis. These wealthy nations will be unable to ignore the plight of their poorer neighbors because (1) modern communication methods will not permit it, (2) many less-developed nations contain supplies of scarce natural resources and raw materials wanted by industrial economies, and (3) political rivalry among powerful nations will continue to involve the less-developed areas of the globe. Resource scarcities and environmental crises will increasingly plague the industrial nations creating social tensions.

The consequences implied by this vision are not attractive; expanding human misery in the world punctuated by increasing disharmony among nations and peoples; rapacious behavior by desperate governments in the global scramble for resources and food; and an inexorable drift toward authoritarian and militarist governments. In this setting, food is only one problem.

SOME ALTERNATIVES

Few observers think nothing can be done to cope with the world's food problems over the next decade or two. Most feel man is not completely at the mercy of population trends and production problems. He can adjust. Within limits, his social, political, and economic institutions can adapt. New or improved policies can be adopted at international, national, and individual levels.

During the next 10-15 years, the requirements for food will grow rapidly in the less-developed world and less rapidly in the developed regions. The growth potential for food supplies is quite uncertain, but, supply growth in the less-developed world will not keep pace with demand. Food imports from the developed world will be needed in many areas to maintain diets at their present levels.

There will probably be "enough" food of all kinds for the developed world. But millions of others in the world will have much less than "enough" and no financial means to secure it. Therefore, difficult choices confront us nationally.

Clearly, one choice is to do nothing about the situation. This alternative has much support in one way or another throughout this country. Supporters of this view argue that we must harden our hearts to the present plight of people in poor, over-populated lands. By providing food and other aid we are only prolonging the inevitable adjustments that must come and adding to the ultimate misery and suffering that present and future peoples in those lands will endure. Others say that various forms of food and other aid we can offer will surely cost more money to U.S. food consumers and taxpayers, and it's not worth it.

On the other hand, millions of Americans feel doing nothing is not an acceptable choice. The major policy choices involving action and commitment can be presented and discussed in the context of our four-way classification of the world food problem; supply, demand, long-run, short-run.

Short-run Supply

Year-to-year fluctuation in food supplies will likely be sizeable, especially in less-developed lands. If recurrent famines are to be mitigated, then food reserves and strategic stockpiles of grain are an alternative. Private trade will not carry inventories sufficient to cover these shortfalls for non-commercial markets because potential profits are unlikely to equal storage costs. National governments and international agencies must be involved. Although some programs and policies do exist, they are relatively small and are operated primarily by the wealthy grain-exporting nations and various international organizations.

A successful food reserve program will have to surmount many problems. These include the questions of who will hold the physical stocks, how will acquisition and storage be financed, how will payments be made, what rules will govern disposal priorities, and how will such stocks be dispensed inside recipient countries?

Long-run Supply

If the world's food problem is to be solved, then nations in the less-developed world must continue to provide most of their own food supplies. The United States and other food-surplus nations can help, but they cannot do it all. Thus, policies that asssist nations to accelerate their agricultural production trends are crucial.

These efforts include supporting agricultural research in the less-developed world. The provision of scientific training, technical assistance, and financial aid for agricultural sectors of many nations also fits in this package. Hanging over all is the essential requirement that leaders and people of food-short nations make agricultural development and growth a top priority item in their own economic and social investment plans.

For some less-developed nations, long-term access to food aid may be required until they can feed themselves adequately or purchase foodstuffs on the commercial market. In the absence of such an undertaking, supply and demand will be equated in the grim equation of high food prices, malnutrition, and starvation. Yet, many experts believe that making long-term aid and technical assistance dependent upon self-help efforts and policies within recipient nations should be a keystone of future U. S. foreign aid policy.

Along with food aid and production assistance in underdeveloped countries, attention must be devoted to marketing and distribution systems. They must be developed so the likelihood of simultaneous gluts and shortages occurring in the same nation is reduced. Traditional marketing systems are often complex and highly sophisticated but many have evolved (1) to facilitate raw material exports and (2) to spread domestic supplies of food in small lots over the nation. Under pressure of expanding populations, urbanization, and the need to deal with growing food production and imports, these traditional systems will be strained severely. A stagnant marketing sector can easily throttle agricultural development efforts. Financial and technical aid in marketing are needed to insure that gains in farm productivity are transmitted through the society.

Strategic stockpiles of grain can help lessen famines in the future.

Demand

The demand side of the production/consumption balance is steadier and less-subject to fluctuation or policy action in the short-run than the supply side. But in the long sweep of years, the behavior of population and income growth will be critical, especially population.

Population control efforts are the central alternative in reducing the long-term pressure on this earth's agricultural and other resources. Success here will have to surmount the social, religious, nationalistic, and moral issues involved in population control, especially those that stretch across national boundaries. The fact that population growth rates differ so widely around the world makes the international aspects of promoting this policy alternative even more complex. For example, world-wide population is growing at 2.2 percent annually; Western Europe grows at 0.3 percent while Southeast Asia and tropical South America both grow at 3.0 percent. In addition, the results of successful population control in terms of reduced pressure on scarce resources are not apparent for many years after the programs are launched.

The FAO and USDA projections to 1985 suggest that, on a global basis, food supply and effective demand probably would balance. A major problem is the uneven distribution of shortage and surplus. Policies to promote general economic development and income growth in food-deficit nations will help them earn the money needed to enter commercial markets for foodstuffs. Among other things, this includes improved access to markets in developed nations for products the less-developed nations have to export. In the absence of this kind of economic growth, purchases of food on commercial markets can be met only by long-term transfers of financial assistance from the rich to the poor nations.

Many people and organizations in the United States are advocating a fundamental "policy" change to be made by concerned persons, acting individually and voluntarily. Primarily for humanitarian reasons, people are urged to reduce their consumption of meat, other livestock products, and even fertilizer. The idea is that reduced consumption here might lead to increased food availability in poor nations. Success in this activity on a large scale would require major institutional and government policy changes and commitments to secure and somehow transfer the surpluses generated to the places and people in need. Relying on traditional markets and prices to do this job probably is not realistic, even if voluntary cut-backs in consumption of high-resource-using foods and fertilizers are successful. Critics feel it diverts attention from the basic underlying problems and their solutions.

Social Adjustments

Countries with poorly-fed people are faced with many difficulties beyond the problems of limited land and antiquated agricultural practices. It is not only the physical limitations, but the economic, social, cultural, institutional, and political limitations that have caused much hunger and must receive attention in the future. Problems such as transportation, storage, income levels, and numerous others need solving. As important, in some places, are supersitition, custom, and illiteracy. Since many of these involve the feelings and values of human beings, they will be the most difficult.

Institutional factors also act as barriers to increasing food supplies. Some of these are inequitable land tenure arrangements, lack of low-cost credit, unfair taxation laws, weak production incentives, and out-moded inheritance laws and customs.

Education is one of the most important tools for correcting the world food problem. Obviously, education in better food production techniques is of great importance, but equally important is improved training in nutrition and dietary matters. To alter food habits takes a long time.

Improving the total educational level is necessary not only to deal with food problems but to increase general efficiency and income throughout the society. It is a central requirement of broad-based economic development.

CONCLUSION

Everything cannot be done at once. The resources will not be available. Intensely difficult choiccs must be made not only among the policies discussed here but among others that directly and indirectly involve the world food system. Confronting food policy problems leads us sooner or later into virtually all aspects of the human condition on this planet.

Is a food balance at some low level sufficient? Should we expect a higher level of nutrition to be the minimum acceptable condition. What quality of human existence do we expect? Euripedes, the author of many ancient Greek tragedies, once wrote,

"With hunger, rich and poor are all as one."

This chapter focuses attention on the factors influencing the 40 percent of our food costs that arise at the farm level. The authors examine the present and potential availability of foods in the U.S., especially grains, and conclude that the U.S. faces no threat of food shortages. But, food will continue to cost more.

In analyzing potential changes in both domestic and foreign demand for U.S. farm products over the next 10 years, they find that total domestic and foreign demand will grow between 1.3 and 1.7 percent per year. This compares to 1.7 to 2.0 percent in the decade of the 1960's. Farm prices will be more unstable and average higher than in the early 1970's.

Finally the chapter discusses principal policy options confronting U.S. society with respect to the production and use of food in both the export and domestic markets.

2. WHO WILL GET IT?

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Consumers in the United States are among a select group of the world's population who face no serious threat of food shortages, either of calories or protein, over the decade. People in the United States are in the enviable position of having enough, plus something left over to share. But this presents the problem of making choices. How much should be produced? How should the available production be divided between domestic use, commercial exports, and food aid to countries chronically short of food? What are the effects of policy options on farmers, consumers, and agribusinessmen?

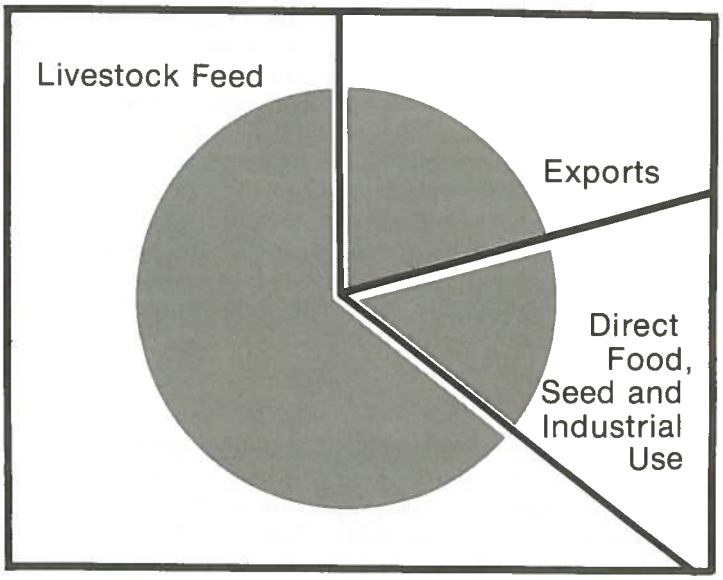
Prices consumers pay for food at the check-out counter are influenced by transportation, processing, packaging, and distribution costs as well as the cost of raw farm products. In recent years, the value at the farm of all food purchased at retail has averaged about 40 percent.

FOOD AVAILABILITY

Grains and starchy staples like potatoes, cassava (tapioca) and yams account for a high proportion of the world's food energy. In addition they provide much of the raw material used for livestock production. Thus, the total supply of food in a country is closely related to the per capita availability of grain or grain substitutes.

The United States stands close to the top, along with Canada and Australia, in the amount of grain it produces each year in relation to the number of people in each country. Per capita production of grain in the U.S. is slightly more than 1 metric ton (2204 pounds) per person. This is about five times the average amount produced annually per capita in such countries as India, Indonesia, and Bangladesh (Figure 1). Between 400 and 450 pounds of

ESTIMATED AVERAGE ANNUAL PER CAPITA PRODUCTION AND USE OF CEREAL GRAINS*



Metric ton per person
*Principally wheat, corn, rice oats, barley and sorghum

Figure 1

Appreciation for counsel is extended to Sylvia Lane, University of California-Davis; Nancy B. Preas, University of Georgia; Houston E. Ward, Oklahoma State University; and Harriet J. Wright, University of Massachusetts.

grain per person per year will meet 75 percent of the minimum calorie needs (and a substantial part of the protein requirements as well) if it is consumed directly as whole or semi-processed grain. Thus, at current levels of production, the United States could support up to four or five times its present population on an Asian-type diet.

While 450 pounds per person is sufficient to meet a high proportion of the minimum calorie needs, this amount provides little margin for emergencies or for conversion into livestock products. For this reason, a country with grain production at this level is in a precarious position. A short crop can cause immediate hardship or even starvation for vulnerable groups of people.

U.S. Food Capacity

A country with a large grain supply such as the U.S. need make only modest changes in the composition of its diet to compensate for changes in production or in demand. The U.S. now converts about two thirds of the grain produced each year into livestock products. This gives the U.S. great flexibility in meeting future food requirements. Livestock constitutes an excellent balancing mechanism. In years of short crops, we can slaughter a few more animals, feed less grain to those remaining, and consume more of the grain directly.

Presently, about 15 percent of the U.S. grain production is used for seed, industrial uses, and direct human consumption, including the amounts converted into flour, breakfast foods, snacks, corn syrup, beer, and other alcoholic beverages. Varying the quantity of exports provides an additional cushion since about 20 percent of our grain, or enough to provide the minimum calorie needs for between 150 and 200 million persons, is normally sold abroad.

The potential for increasing production cannot be ignored in considering the availability of food in the U.S. We by no means exhausted our capacity to increase output. Estimates of the amount of land that might be cultivated run as high as 450 million acres. In recent years we have planted little more than two-thirds of that amount, usually between 300 and 330 million acres, Apart from any increase in yields (from improved farming techniques and seed varieties), farmers, if given sufficient incentives and the resources of fertilizer and machinery, could increase grain production as much as one-third during the next 10 years. Thus, U.S. consumers appear to be assured adequate supplies of food, at least over the next decade, to maintain a high-quality diet. The food problem in this country is one of cost, not availability.

Food and Income

If consumers wish to maintain a high proportion of livestock products in their diet, it may be necessary to allocate a slightly higher proportion of their income to purchasing food in future years than was allocated up to 1972. During the 1960's, the proportion of income spent on food declined; but the trend was reversed in 1973 and 1974 as food prices rose relative to the prices of other items which consumers buy. Part of the increase was due to higher distribution costs (especially in 1974), but a significant proportion was attributable to the sudden turn-

Consumers may have to spend a larger percentage of their income for food if they wish to maintain a high proportion of livestock products in their diet.

around in farm prices beginning in 1972. Such prices generally were depressed throughout the decade of the 1960s. Farm prices may decline once again from the high levels attained in 1973-74, but no one expects them to return to where they were in the early 1970's. In any event, the proportion of income allocated to food is not likely to rise very significantly. About two percent of the typical family's income was reallocated from nonfood to food purchases between 1972 and 1974. This is about the maximum that is likely to occur even if we are so unfortunate as to experience a series of unfavorable crop years, and energy costs continue to escalate.

Consumers do have some flexibility in deciding how much of their income to allocate for food. One alternative is to change the composition of their diet. Food expenditures can be reduced by consuming less nutrients from meat and more directly from grain and vegetable products. Converting grain into meat involves a loss of efficiency and raises the cost of nutrients. For example, it requires two to three pounds of grain to produce a pound of live broiler, five to six pounds of grain for one pound of live hog, and from six to ten pounds of grain for each pound of fed beef. However, a major portion of the beef consumed comes from converting grass and forage crops into a form usable by humans.

Eating habits also will have a bearing on the amount of grain available for export. Substantial changes in diets could reduce the total demand for grain, as well as livestock, thereby reducing prices and incomes of both grain and livestock farmers. Such a change also would adversely affect related businesses and those employed in producing and distributing livestock products.

The availability and cost of food in the U.S. will be influenced by policy decisions made with respect to land use, the availability of fertilizer and energy, export or import restrictions, and the amount of money appropriated for food aid. But before turning to the question of what is likely to happen under alternative policies, we need to examine recent trends in consumption to be shared in the absence of any additional government intervention or changes in direction from current policies.

PROSPECTIVE CHANGES IN DEMAND

Three elements must be considered in appraising future demand for farm products: domestic use, which normally absorbs about 80 percent of the total value of all farm commodities produced in the U.S.; commercial export demand, which has ranged from 16 to 22 percent of the total value of production over the past decade; and, food aid shipments, which in recent years have amounted to between 2 or 3 percent of the total value of U.S. farm output. For some products, such as wheat and rice, however, food aid shipments are extremely important to both U.S. farmers and to recipients.

Changes in U. S. Population and Incomes

Changes in domestic demand have been much more stable and predictable over the past decade than changes in export demand, and are likely to remain so in the future. Growth in demand is mainly a product of two forces—population and changes in income. In addition, underlying trends in tastes and eating habits must be considered. These are associated with changes in life-style, such as more women working outside the home, the increase in suburban living, higher mobility, the changing age distribution of the population, and increases in knowledge concerning food and nutrition. Major contributors to moderately high rates of growth in domestic demand for food over the two past decades—increasing population and rising incomes—are slowing down. Thus, the overall rate of growth in domestic demand for farm products is likely to be less over the next decade than it was during the preceding decade.

The average annual rate of increase in the total U.S population has declined recently from a peak of about 1.7 percent in the 1950's to less than 1 percent today. Fewer babies are now born in relation to the number of women in the child-bearing age range, although the base for expansion has increased as a result of the post-war baby boom. If recent changes persist, we can expect fewer young children and a smaller number of teenagers to consume hamburgers and french fries in the early 1980's than we had in the 1960's.

Real per capita incomes (current dollar incomes adjusted for the effects of inflation) may not rise as rapidly over the next decade in the U.S. as they did in the 1960's. A slower rate of real income growth seems likely because of higher prices for products derived from petroleum, additional costs of controlling pollution, and a slower rate of gain in labor productivity. Furthermore, as incomes rise, a smaller proportion of each additional dollar is spent for raw food products.

Changes in Eating Habits of U.S. Citizens

If recent trends in eating habits persist, we can expect a modest increase in the per capita consumption of cheese, low-fat dairy products, poultry meat, and beef. This will lead to higher overall requirements for grain and soybean meal. The total demand for pork, potatoes, non-citrus fruit, and grain for direct human consumption is likely to grow at an annual rate of less than 1 percent. Use of eggs, whole milk, and butter probably will continue to decline, although perhaps at a somewhat slower rate.

Further displacement of animal fats by vegetable oils seems likely. The consumption of protein derived from vegetable sources, principally soybeans, is likely to rise, not so much as a replacement for meat, but as an "extender" of products like hamburger. Unconventional foods, such as algae, yeast, or products derived from waste materials or hydro-carbons may play a minor role in displacing foods now consumed in the U. S.

Actual consumption of perishable products like fruit, vegetables, and meat will be determined mainly by what farmers produce. If price relationships are so unfavorable that farmers decide it is unprofitable to produce apples or pork, consumption will decline. We cannot consume what is not produced. Annual consumption is linked closely to production, expecially for items which cannot be stored for long periods because of high cost and the risk of deterioration.

What families will be eating in the next decade cannot be foreseen precisely without taking into consideration price relationships. Meat consumption will depend, to a large extent, on the relative returns farmers expect to earn from selling grain directly for human food use, for export, or for conversion into livestock products.

Total Domestic Demand for Farm Products

Considering probable changes in population, income, and food preferences, the domestic demand for farm products over the next decade is expected to grow between 1.1 and 1.4 percent per year. This is slightly faster than the annual rate of increase in total population of about 1 percent. The growth in domestic demand, even with a modest increase in per capita consumption of meat, should present no serious challenge to American agriculture. The more critical question is what is likely to happen to the commercial or effective demand (need plus money) for U.S. farm products abroad, and the potential requirements for food aid (needs in absence of purchasing power).

If eating habits persist, we can expect a modest increase in per capita consumption of cheese, low-fat dairy products, poultry meat, and beef.

WORLD FOOD DEMAND

Why Trade

Many countries in the world look to the U.S. for a part of their food needs. The principal reason to import food, rather than strive for self-sufficiency, is to lower food costs. Access to imported food permits a country to specialize in those products in which it has the greatest comparative advantage and to trade a part of those products for others (food or non-food) in which it is at a comparative disadvantage. Gains from specialization and division of labor apply internationally as well as domestically. Through the process of specialization and trade, the average cost of food is reduced because of greater efficiency in the use of resources. Thus, trade on a continuing basis is beneficial to both the U.S. and other countries.

Overseas markets are important, not only for U.S. farmers, but for the general public as well. In 1974, farm exports earned $22 billion in foreign exchange or about four times as much as a decade earlier. Without such exports our balance of payments deficit would have been even larger.

Farmers rely on export markets to take about 20 percent of the total value of U.S. farm output. More than 70 percent of 1974 farm export earnings came from the sale of grains and oilseeds, principally soybeans and products derived from soybeans (Figure 2). In recent years, two thirds or more of all the wheat produced in the U.S., over half the soybeans and rice, one third or more of the tobacco, and over one-fifth of the corn crop have been exported. Exports are also important to producers of cotton, and many fruits and vegetables.

Producers of grains and soybeans are especially vulnerable to a change in export markets. As exports have risen, the position of U.S. farmers has become somewhat more precarious since the export market generally is less stable than the domestic market. Price instability, particularly of grains, has been associated most frequently with changes in export demand. The surge in foreign demand which began in 1972 led to a doubling of grain prices in 1973-74. If export demand should decline again as it did in the 1960's, there would be dire consequences for many U.S. grain producers since production costs have risen significantly and are not likely to decline.

Other Countries Depend Upon the U.S.

Other countries have become increasingly dependent on the U.S. to provide feed for livestock as well as grain for human consumption at prices U.S. consumers consider high. The U.S. supplies about one-half of all the grain that moves in world trade. During the 1960's and early 1970's, the U.S. performed the function of providing food reserves for the world. Since we maintained large grain stocks, countries could obtain additional supplies whenever needed. When the world demand for grain suddenly increased beginning in late 1972, the United States provided almost 90 percent of the increment, thus depleting our reserves. Policy decisions made in this country are important to other nations as well, since the availability and cost of grain on world markets is strongly influenced by what happens in the United States.

About 60 percent of our farm exports go to industrialized countries having relatively high incomes (Figure 2). This includes Japan, countries in Western Europe,

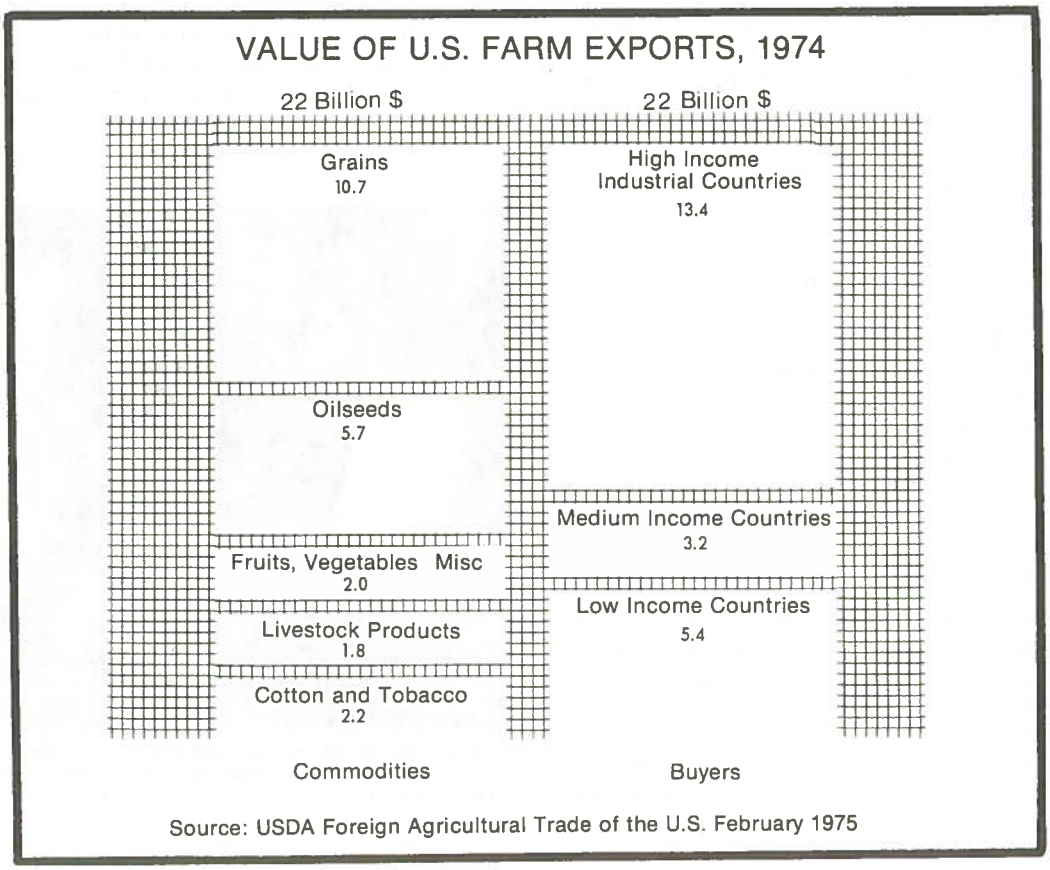


Figure 2

Canada, and the Soviet Union. A high proportion of the grain imported into these countries is used to feed livestock, although Japan does import substantial quantities of wheat for bread-making.

Smaller quantities of U.S. farm products are commercial sales to middle- and low-income countries which have been experiencing rapid rates of income growth in recent years. This includes Taiwan, Brazil, and Mexico. Some of the petroleum exporting countries are developing into major customers for U.S. farm products, industrial goods, and technology.

About one-fourth of our exports go to countries at the lowest end of the income scale where food supplies, even in good years, are close to minimum. These include China, India, Pakistan, Bangladesh, and Indonesia.

The increase in the value of farm exports which occurred between 1971 and 1974 was accounted for entirely by cash sales for dollars. Concessional food sales under long-term credit arrangements and donations amounted to less than a billion dollars in 1973, only about 4 percent of the total value of farm exports. About one-fourth of the billion dollars were food donations on a government to government basis and distributed by voluntary agencies.

The Future of Farm Exports

Future exports are difficult to forecast because they depend on such uncertain factors as weather in the Soviet Union, the monsoon in Asia, growth in income, the balance of payments, and a whole host of policy decisions.

In viewing future exports of U.S. farm products, it is useful to divide prospective importing nations into two groups. The first are those countries which can afford to purchase food from abroad. The second are those countries where incomes are low and the balance of payments situation is so critical that there is little prospect of their being able to pay for large quantities of food imported over an extended period. Unfortunately, most of the world's malnourished population live in the latter group of countries. Large increases in population in these countries will not be translated into effective demand (need plus money) for U.S. farm products unless some way can be found to finance additional imports.

The rise in U.S. farm exports in the last decade has been closely linked to rapid increases in income in other countries and the accompanying growth in demand for livestock products. Income growth rates in most countries are likely to slow down in the years immediately ahead, except in the oil exporting countries. Balance of payments problems may have an adverse effect on the rate of expansion of commercial demand for farm imports, expecially food grains and soybeans. Another potential factor limiting growth of demand for imports are the agricultural policies designed to encourage self-sufficiency, including the European Economic Community's protectionistic system.

Greatest opportunities for increasing exports lie in food deficit countries where the population base is large and growing rapidly. Many question whether countries like India, Bangladesh, and Indonesia can increase food production sufficiently to match the rate of growth in population. In the event they do not, the need for food aid will increase enormously.

Food Aid

The U.S. has been the world's principal food supplier on concessional terms (donations and long term dollar credit sales). During the past two decades, we supplied over 80 percent of the world's total food assistance. Current food aid programs date from 1954 when Congress enacted what is now commonly called "P.L. 480" or "Food for Peace." A principal objective of the original Act was to build commercial markets by enabling countries short of foreign exchange to purchase surplus farm commodities in their currency. However, many people, including Congress, viewed the Act as a device to dispose of surpluses rather than a program designed to meet specific nutritional or welfare objectives. In most cases, the United States has provided food aid when it was politically acceptable or expedient to do so, and when surplus commodities were available.

Despite increasing concern about starvation and malnutrition, the total amount of food aid provided by the U.S. has declined in recent years. Appropriations for the P.L. 480 program have been cut from a peak of over $1.5 billion annually in the 1950's and early 1960's to less than $1 billion in 1974, though expansion is occurring in 1975. Moreover, a billion dollars will buy fewer calories today than 10 years ago when grain prices were about 50 percent lower. The commodities shipped under the food aid program have been grain (mainly wheat, rice, corn and sorghum), soybean oil, and non-fat dry milk when available. Among the major recipients have been India, Pakistan, Bangladesh, Egypt, Brazil, South Vietnam, South Korea, Indonesia, and Taiwan.

No consensus has emerged from analysts regarding prospects for increased total exports from the United States in the next decade. Some feel the recent boom is temporary and world demand for our products, especially grain, will decline in the next few years as it did in the 1960's. Others believe our exports will continue to expand.

The latter base their view on the rapid increase in population in developing countries, unfilled demands for livestock products in countries with the capacity to pay for imports (including the Eastern Bloc and the oil exporting nations). Other factors cited include the slowing down of yield increases in food deficit countries, shortages of fertilizer, and the possibility of less favorable weather for crop production in many parts of the world. Uncertainty regarding policy decisions and the balance of payments situation adds to the difficulty of anticipating export demands.

Since the events that affect export demand, like weather, are so variable, we can expect total exports to shift abruptly from one year to the next. Under these circumstances and in the absence of reserve stocks, both farm and food prices could be expected to fluctuate more in the next few years than in the 1960's when a combination of large government holdings and support programs held both world and U.S. grain and oilseed prices within a relatively narrow range. The export volume for commercial and concessional purposes of U.S. farm products is likely to follow an upward trend over the next decade, but with substantial variations above and below the line representing the average rate of growth of 2-3 percent per year.

Annual growth in domestic demand for food was estimated to grow between 1.1 and 1.4 percent per year. Assuming exports of all farm products will continue to average about one-fifth of our total farm output, it is estimated that total domestic and foreign demand could grow at an average rate of between 1.3 and 1.7 percent per year. But, any year may be higher or lower due to the variations enumerated.

POLICY OPTIONS

The foregoing suggests that the principal problem confronting both producers and consumers over the next decade is likely to be one of instability in the prices of farm products and food rather than a persistent trend up or down in the relationship between food and nonfood prices. Future policy issues, as in the past, are likely to be linked to trends in food and farm prices.

If growth in total demand does outpace supply, causing food and farm price rises, society will be concerned with what Professor T.W. Schultz refers to as the "food problem." If the reverse prevails, causing farm product prices to fall and farm profit margins to become narrow, we will be confronted with a "farm problem" not unlike that of the 1960's. No one can be certain which situation will prevail in the years ahead.

The principal measures government might take to deal with a persistent "food problem" can be grouped under the following headings:

(1) A public storage program,
(2) Export controls,
(3) Elimination of restrictions on imports,
(4) Increased domestic production,
(5) Expanded consumer subsidy programs.

Another alternative, of course, is to rely solely on free market prices to determine both consumption and production. This alternative is not discussed, but in general it would probably lead to greater price fluctuations and a smaller volume of food aid.

Policy issues will relate to wheat, feed grains, and soybeans.

Storage Program

Little can be done directly to stabilize supplies of perishable commodities such as fruits, vegetables, meat, and eggs. Production varies substantially from year to year due to weather and the response of farmers to past prices. In addition, storage of perishable commodities for long periods is impractical because of the risks of deterioration and high storage costs. The availability of livestock products can be influenced indirectly by stabilizing supplies and prices of grains and soybeans. However, variations in exports attracting most public attention have been wheat, feed grains, and soybeans. Thus, policy issues related to storage center around these commodities. The principal questions are how much to store, who should hold the stocks, and at what prices should stocks be acquired and released.

Over the past 15 years, carryover stocks or reserves of grain in the U.S. have ranged from over 100 million tons in the early 1960's to under 24 million tons in 1975. Many concede that reserves were excessive in the early 1960's and too low in 1974-1975. The figure of 60 million tons for total U.S. grain reserves, with about two-thirds feed grains and one-third wheat, has been suggested as a reasonable target for the late 1970's. It is felt this quantity would be sufficient to compensate for all but extreme variations in production and demand.

Clearly, farmers, private traders, exporters, and importers of grain will hold some stocks in the absence of a government storage program, and probably more than in the past, given the uncertainties with regard to future supplies and prices. But, the total quantities held in storage will be smaller and price fluctuations greater if sole

reliance is placed on private action than if private holdings are augmented by publicly-held reserves. Moreover, there is no assurance that private holdings will be managed in such a way as to reduce price instability. If farmers elect to hold stocks in periods of rising prices, the amplitude of fluctuations will increase. The reverse would be true in periods of declining prices.

If the amount of grain held by the government were to increase as it did during the late 1960's, we would expect lower prices in years of short crops or high export demand and somewhat higher prices in years of large crops than would prevail in the absence of a government storage program. Consumers, livestock feeders, some businessmen, and exporters would gain whenever the government elected to dispose of stocks, but would be adversely affected when stocks were being acquired. Food and feed prices probably would be less unstable than if stocks were held entirely in private hands. Recent history also suggests that Congress is likely to be more generous in providing food aid to less developed countries if the government holds large reserves.

Two principal objections to increasing reserve stocks have been advanced by those opposed to the government again becoming a major holder of grains. First, it would add to government costs, and second, the presence of large stocks might have a depressing effect on returns to producers. At one time during the 1960's, storage costs amounted to more than a half billion dollars annually and were criticized by consumers, businessmen, and others in society.

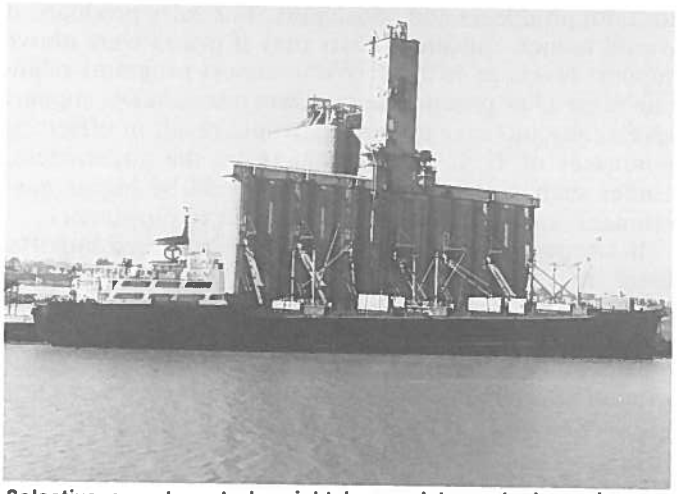
Interest and storage charges on grain now average around 15 percent of the total acquisition cost each year. There is no way to avoid such costs if reserves are to be maintained and the public will have to bear the cost, either in the form of higher food prices or higher taxes to support government subsidies. Under a public storage program, more of such costs are likely to be paid for out of tax revenue.

Some people argue that large stocks, especially if held by the government, hold down prices, at least in years of short crops, thereby adversely affecting incentives to maintain or increase production. But, during most of the 1960's and early 1970's, the government storage program served to support or raise farm prices.

The Agriculture and Consumer Protection Act of 1973 provides for more market orientation and less government involvement in storing farm products. Price-support loan rates have been established at a low level to avoid any significant build-up of government-held stocks. Market prices for grains would have to fall drastically from the 1973-74 levels before the government would acquire any reserve stocks. Also, if prices drop drastically, the Act includes discretionary authority for production cutbacks to bring supply more in balance with demand.

Export Controls

Large year-to-year changes in export demand have been responsible for much of the instability in farm prices over the past decade. Some of the upward pressure on prices can be reduced in years of tight supplies by limiting exports. Export controls would make more of the total supply available for domestic users, thereby leading to lower internal farm and food prices. At the same time, such action would reduce export earnings and jeopardize future markets for U.S. farm products.



Selective export controls might be used to protect regular customers and deny exports to intermittent buyers.

If the U.S. cuts off supplies to importing countries in years of short crops, our reputation as a reliable supplier is impaired. Under these circumstances, importing countries can be expected to give higher priority to increasing domestic production or the development of alternative sources of supply. Furthermore, with lower internal prices, there would be less incentive for U.S. grain farmers to maintain or expand production. Thus, a clear conflict emerges between the short-run interest of consumers in holding down food costs, and the longer-run interest of the U.S. in maintaining export markets for grains, soybeans, and other products which are needed to help pay for oil and other essential raw materials.

Selective, rather than general, export controls might be used to protect regular customers and deny exports to intermittent buyers such as the Soviet Union and China. An alternative might be to enter into long-term supply contracts with selected customers, giving them assurance of minimum supplies in years of buoyant export demand in return for their commitment to maintain purchases from us in years of abundant supplies.

Elimination of Restrictions on Imports

Import restrictions are important for only a small group of commodities, mainly fresh or frozen beef, dairy products, and, until recently, sugar. Tropical products including coffee, tea, cocoa, and bananas enter duty-free and are not subject to quotas. Congress did not renew the Sugar Act in 1974 and consequently the quota system which previously limited U.S. sugar production as well as imports is no longer in effect. Imports of fresh and frozen beef have risen in recent years, but the volume has been limited by intergovernmental agreements negotiated under the threat that quotas would be imposed if imports exceeded an established amount.

Larger quantities of beef and dairy products would flow into the U.S. if present restrictions were eliminated. The major effect would be to reduce prices of low-grade beef

for both producers and consumers. For dairy products, it would reduce consumer costs only if prices were above support levels as in 1974. With support programs maintained on dairy products and market prices below support levels, any increase in imports would result in offsetting purchases of U.S. dairy products by the government. Under such circumstances, there would be higher government costs and little or no net gain to consumers.

If internal prices fall as a result of increased imports, there obviously would be less incentive for farmers to maintain production. Greater dependence on imports could lead to lower but more unstable prices since the U.S. would become dependent on the availability of supplies from other countries.

Increased Domestic Production

The major way to solve the world food problem is to increase production, but that does not mean every country should strive for self-sufficiency. For some it will be less costly to import food. The United States clearly has the capacity to produce more food for export. Among the major domestic policies to increase output are the elimination of restrictions on planting certain crops; an increase in support or guaranteed prices to provide additional incentives for farmers; priority allocation of natural gas and other sources of energy for fertilizer and crop production; and larger appropriations for agricultural research stressing the development of new technology leading to higher yields.

Planting decisions in the past, especially for major crops such as grains and cotton, have been strongly influenced by government acreage control or payment programs designed to keep a certain proportion of cropland idle. As much as 15 percent of the land that might have been cultivated in the 1960's and early 1970's was kept idle. But nearly all restrictions on planting were removed or relaxed in 1973, 1974, and 1975. Today, relative prices and profits between crops are the guiding force in producer decisions.

Payments to farmers for keeping land idle were reduced in 1973 and eliminated entirely in 1974. Acreage allotments remain in effect for only three crops—rice, tobacco, and peanuts. These can be changed from year to year to encourage greater production if necessary. The Secretary of Agriculture has the option under legislation adopted in 1973 to reintroduce programs designed to keep land idle if prices of grains and soybeans fall to low levels.

Support prices for farmers could be raised to provide greater insurance and more incentive for farmers to increase production. Commodity loans are limited to products which account for only about half the total cash receipts of farmers. There are no support programs for meat, eggs, fruits, or vegetables. Major commodities supported in the past 40 years have been grains (wheat, corn, rice, sorghum, etc.), oilseeds (soybeans, peanuts), cotton, tobacco, sugar, and dairy products.

Much of the controversy over government price programs for farmers has centered around the level of support for wheat, corn, cotton and dairy products. The principal function served by supports during the 1960's was to put a floor under farm incomes, not to encourage more production. During World War II, however, support prices were raised to provide additional incentives for farmers to increase output. They could be used for this purpose again. Many Congressmen, farmers and businessmen think support levels provided in the 1973 Act are too low to provide adequate protection.

The production of farm commodities will always be in balance with consumption at some price. The question is, what price? If support prices are raised above the level at which supply and demand will be balanced over a period of years, the government will incur substantial costs in the form of payments to farmers or subsidies for disposing of surpluses.

It is difficult to project the prices at which future production and demand are likely to be brought into balance. Hence, it is difficult to determine what would be an appropriate level of price guarantees over the next few years. As a result of a high rate of inflation over the past two years, present support levels are below average costs of production. In view of the uncertainties in predicting export demand, it is difficult to determine how much support levels might be raised without incurring large government costs.

Consumer Subsidy Programs

Since the late 1960's, expenditures for domestic food subsidy programs have been one of the fastest growing items in the federal budget. In early 1975, about 20 million people (10 percent of the total U.S. population) were participating in the Food Stamp Program at a cost to the government of nearly $5 billion annually (Figures 3 and 4). Additional food subsides are now provided under programs designed to improve child nutrition (principally the school lunch program) and to assist the elderly.

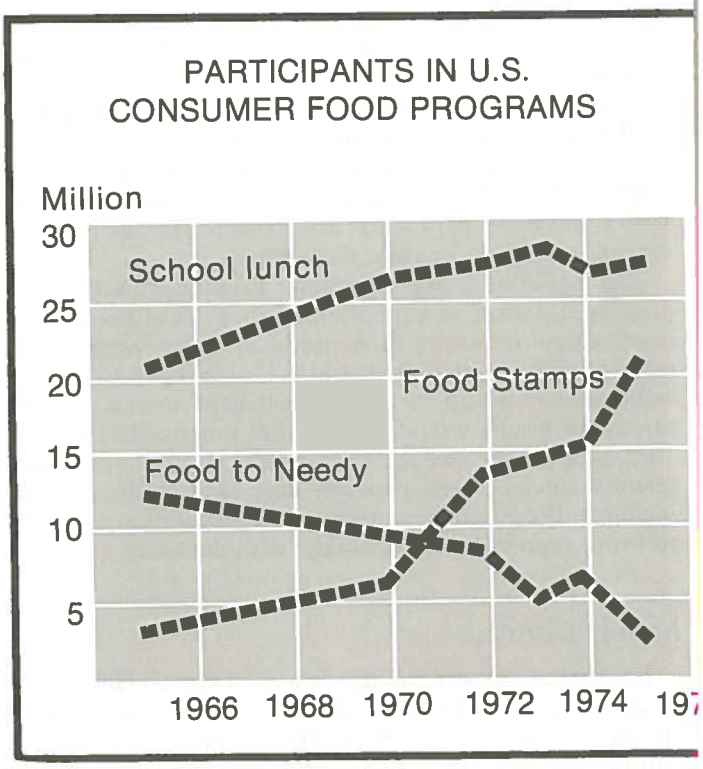


Figure 3

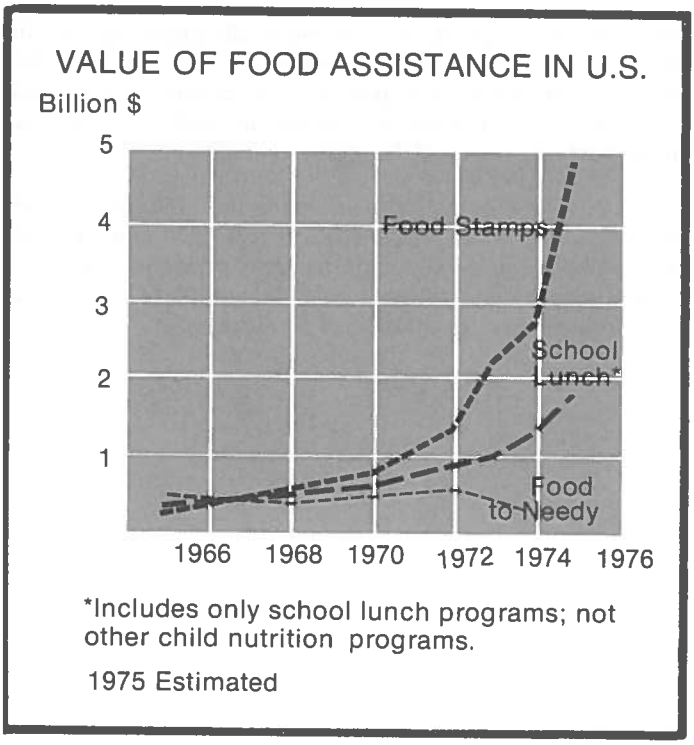


Figure 4

While participation is growing, the total effect of such programs on food purchases is still relatively modest. Total food subsidies probably add about 3 percent to the total farm level demand for food. Such programs could be expanded to accommodate more individuals by relaxing eligibility standards or by increasing the share of cash contribution from the government relative to those made by participants.

The consequences of food subsidy programs are not unlike other "transfer payments" such as social security benefits or welfare programs which take money from one group and pay it to another. The effective demand for food would increase more rapidly with an expansion of such programs, thereby adding slightly to inflationary pressures. But the principal effect would be to increase the welfare of low income participants. Such programs now serve as a substitute for increased welfare payments.

ADJUSTING PRODUCTION

The foregoing policy options are appropriate to consider if the U.S. is confronted with a persistent "food problem." But it is not certain that shoratages and high prices will continue indefinitely. Past errors in forecasing suggest caution. For this reason, it is prudent to consider what might be done if, once again, the U.S. is confronted with temporary or persistent "surpluses" of grains. Two or three good crop years in succession, if they coincided with a period of weak export markets, could put the "farm problem" back on the policy agenda.

The options for dealing with a surplus situation are the counterpart of those just discussed. We could attempt to curtail production through the price mechanism, that is by creating and maintaining "disincentives" to produce; we could store surpluses and dispose of these wherever possible on concessional terms as we did in the 1960's; or we could attempt to restrict sales or production through such devices as quotas, acreage allotments, and land retirement or "set-aside" programs.

Aggregate farm production responds only very slowly to changes in the average level of farm prices. Eventually low prices will bring about adjustments in production, but putting farmers "through the wringer" in order to curtail production is a painful process. This is one of the major reasons why various policies have been adopted over the past forty years to assist farmers in making adjustments in agriculture.

Temporary surpluses can be accommodated by storing the excess, but if surpluses persist, the cost of maintaining stocks and attempting to dispose of them becomes very high. In general, it is less expensive to pay farmers not to plant than to pay for the crop and then to cover the associated costs of storing and handling the commodity.

During the 1960's, the government abandoned compulsory allotment programs for wheat, corn, and cotton, and shifted to voluntary land retirement programs under which participating farmers were paid to set aside or keep idle a certain proportion of their cropland. The latter programs proved to be more politically acceptable than compulsory acreage allotments and, although costly, reasonably effective in limiting the total output of crops considered in excessive supply.

Among the criticisms directed against past support programs is that they served to reinforce income inequalities within agriculture. Since farmers qualified for payments on the basis of their previous history of production, a relatively high proportion of the payments went to operators of large farms. The concentration of benefits on large farms can be minimized or eliminated simply by imposing an upper limit on the amount of money paid to any one individual. An upper limit is now provided for in the legislation.

A voluntary set-aside scheme can be viewed as a mechanism for public sharing in the cost of maintaining flexibility to meet widely varying export demands. Such programs can be used, not only to transfer money to agriculture in periods when farm incomes are very low, but also to compensate farmers, in part, for bearing the primary burden of adjusting production to cope with unpredictable changes in world food needs.

CONCLUSIONS

Consumers in the United States presently face no threat of food shortages as do their counterparts in many less developed nations. We have a wide array of options open, both to produce more food and to reallocate our abundant supplies of grain among alternative uses if we need to feed more people. The central issue, with respect to food in the United States, is one of price, not availability. Food may cost slightly more in the future than in the past, but any increase in the proportion of income allocated to food is likely to be relatively low, even if weather is less favorable over the next few years and we elect to transfer more of our food overseas. Future food costs will be determined

as much or more by the rate of inflation in processing and distribution costs as by changes in the prices of farm products.

Agricultural prices will average higher over the next few years than in the early 1970's. In addition, farm prices are likely to be more unstable than in the preceding decade, especially if reserve stocks remain low, because of widely varying export demands. Among the policy issues facing the United States in the immediate future will be (1) what to do about price policies for food and farm products, (2) how much grain to store or hold as a reserve, and (3) what measures to adopt, if any, to insure adequate supplies of grain in short-crop years for livestock producers in this country and preferred customers overseas. We cannot afford to ignore commercial markets abroad since they are an important source of foreign exchange.

We have the capacity to increase the amount of grain shipped to food deficit countries. It is mainly a question of how much money we decide to appropriate for this purpose since the countries most in need are likely to be those least able to pay for additional food imports.

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Almost all the world's people get their "daily bread" through mutual enterprise—through sharing. The predominant method is the market system. Therefore the priority policy for sharing of food is to assure opportunity of employment, to make the production and marketing system efficient, and, internationally, to keep trade channels relatively open and unrestricted.

Unfortunately, as of the mid-1970's the market picture is not improving. In the U.S. and elsewhere unemployment persists, while international trade is being restricted more rather than less. Meanwhile, for many years some of the world's people have been malnourished and quite a few have starved, because of "Acts of God," acts of man, variations in human capabilities, and national policies. The U.S. has non-market-shared a part of its abundant food supplies, both at home and abroad. The way it has done so, and the issues and options for the future, conclude this chapter.

3. HOW WILL IT BE SHARED?

The Economics, Ethics, Pragmatics, and Politics of Getting Food to People

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THE MEANINGS OF SHARING

A wide difference of opinion exists about how we—all the world's people—should get our daily bread. Attitudes range from "let 'em starve" selfishness to justice, human brotherhood, and heartfelt human sympathy. If there is to be a rational and consistent food policy, some reconciling of these diverse opinions is necessary.

How indeed do men get their "daily bread"?

They get it through mutual enterprise—the joint effort of small and large groups. Scarcely any family, tribe, ethnic or national group produces its food from only its own resources. Every nation engages in trade to fill out its food supply. For a number of nations, including several in Western Europe, trade is critically important.

The controlling factors in getting "daily bread" to all the world's people are primarily economic and social, and not technical. Feeding the world's people involves bringing all people into mutual enterprise so they can have access to food. It is a question of economic and social organization. It therefore is also political.

Appreciation for counsel is extended to Anita C. Dean, Michigan State University, A. June Bricker, University of Maryland, W. Neill Schaller, Farm Foundation, and J. Carroll Bottum and Dama C. Wilms, Purdue University.

This takes on more meaning when it is acknowledged that the world's total food production is large enough to provide an adequate diet for all the present population. However, the food is so unevenly produced and distributed that some overeat, many are undernourished, and quite a few starve.

Two views of sharing are pertinent to food policy. One meaning of the verb "to share", is to partake together. This emphasizes that the world's provisioning system for food is a joint undertaking. There is mutual sharing of resources and the produce obtained from using them. The sharing is not confined to food producing resources alone but extends to all resources enabling people to earn an income.

A second meaning of "to share" is to grant. Often, this meaning alone is attached to messages about sharing food. Although there are several policies for grant-type sharing of food, it is a serious error to put the sharing idea solely in terms of grant or dispensation. To do so diverts attention from vital issues in commercial and political relationships between individuals and between nations that are mutually involved in food supply. It tempts toward considering all issues in technical terms of food production instead of the social and political ones of human involvement.

ONE WAY WE SHARE OUR FOOD—THE MARKET SYSTEM

The market system is still the predominant method for sharing food, both at home and abroad. The system is dependent upon, and sensitive to, national policy.

Within any country, the first and most basic issue is trying to make sure every able-bodied person has an opportunity for gainful employment.

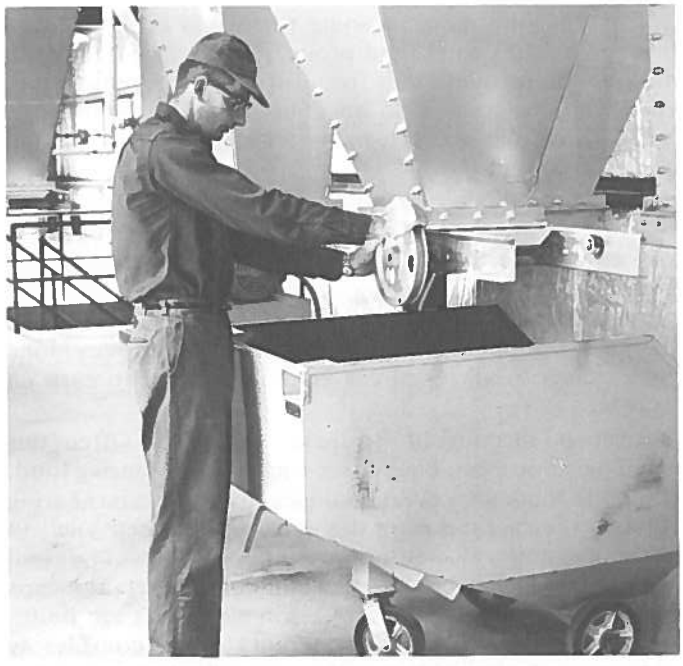
Employment, more than any other factor, controls how well individuals of a country are nourished.

Opportunity may be denied in many ways. There can be industrial unemployment. Any caste system, any substantial degree of monopoly, or any denial of education and training can foreclose opportunity to thousands or millions of people. In an agricultural nation, the idea of opportunity is expressed as access to land. It favors relative ease of access and rejects exclusive landholding by a nobility.

The idea of making opportunity available is phrased with ease and applied with difficulty. Yet, its violation dooms millions to misery. Widespread undernourishment among the world's peoples is more attributable to underemployment of those peoples than to global deficiency in production. A more balanced buying power, both within countries and between countries, could yield a more balanced level of nutrition.

Efficiency in Production and Marketing

The exchange process begins with production and continues with marketing of food produced. The production and marketing processes must be technically efficient and free of discrimination or monopoly if food is to reach people at moderate cost. Any shortcoming in those processes works to injure consumers.



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The Terms of International Trade

Both domestically and internationally, the great bulk of trade in food is commercial. In fiscal year 1974-75, exports of farm products from the U.S. were about $22 billion. Of this, only $1.2 billion was concessionary,[1] and more than half of that amount was long term credit sales for dollars.

Food can flow relatively freely among nations when the following conditions exist: (1) exporting nations sustain their productivity in food, (2) importing nations earn foreign exchange by producing and exporting other kinds of products, and (3) trade is not unduly restricted by trade barriers. In recent years these conditions have not always prevailed. Occasionally, some exporting countries have had poor crops. Several nations needing to buy food have not been able to earn sufficient foreign exchange. The third condition of relatively unrestricted international trade is far from met.

A number of less developed nations needing food still bear the marks of past colonialism preventing them from engaging in active international trade. In developed and less developed nations alike the recent trend has been to impose more barriers, especially "non-tariff" barriers, to trade. If these barriers keep countries with hungry populations from exporting their products, the countries affected will not be able to enter international markets to buy the food they need.

As of 1975, food-trade relationships among nations are being scrambled by the sharply higher prices of petroleum and some other raw materials. Nations rich in those materials are suddenly finding themselves well supplied with exchange and able to bid freely for food. Mineral-importing nations are worse off than before. For poor nations that must import both minerals and food, the plight can be desperate.

POLICIES TO IMPROVE THE MARKET SYSTEM

The U.S. and other nations have developed a battery of policies to improve their internal economies. They have likewise engaged in formal and informal negotiations to improve international trade.

Domestic policies begin with trying to increase employment. They include providing a good system of education, improving equity in price, income, and tax policies, and assuring that the food marketing system be efficient and free of monopoly.

In the mid-1970's, the major public policy issue in the U.S. is how to lift employment and productivity in the economy so as to offer equality of opportunity to all employable persons.

Also getting attention in the mid-1970's is the ever increasing cost of getting raw farm products transformed to food products and delivered to the consumers. This shows up as widening marketing margins. During the inflation of the first half of the 1970's marketing margin increases first

[1]Concessional sales—those shipments made under the Food For Peace Act or Mutual Security Agreements in which food is made available in exchange for local currency or for long-term dollar credit at low interest rates, or is donated to government or relief agencies.

lagged the increase in prices of farm products and food, then outrun them on a relative basis.

As food processing and retailing become more concentrated and are gradually absorbed into conglomerate firms, issues about making the system more competitive grow more inflammatory. Proposals even arise for imposing general price controls, or for developing new integrated delivery systems to bypass traditional marketing.

For 40 years, efforts to increase food trade internationally have been directed toward reducing barriers to trade—trade in all products and not just food. Restrictions impede all international commerce, including that in food.

Where trade liberalization is not successful, an alternate course is to negotiate food trade via international commodity agreements or even by bilateral barter. This is not a preferred policy, but it can substitute for a slow-down in normal trade, burdened and choked off by restrictions.

International trade in food is improved in the long run by successful efforts to speed up the economic development of food deficient countries. It has been demonstrated conclusively that food is a part of virtually any sizable expansion of foreign trade that comes about when a nation develops.

Also contributing indirectly to larger commercial trade in food are improvements in the international monetary exchange system and international lending institutions.

The Deteriorating Picture

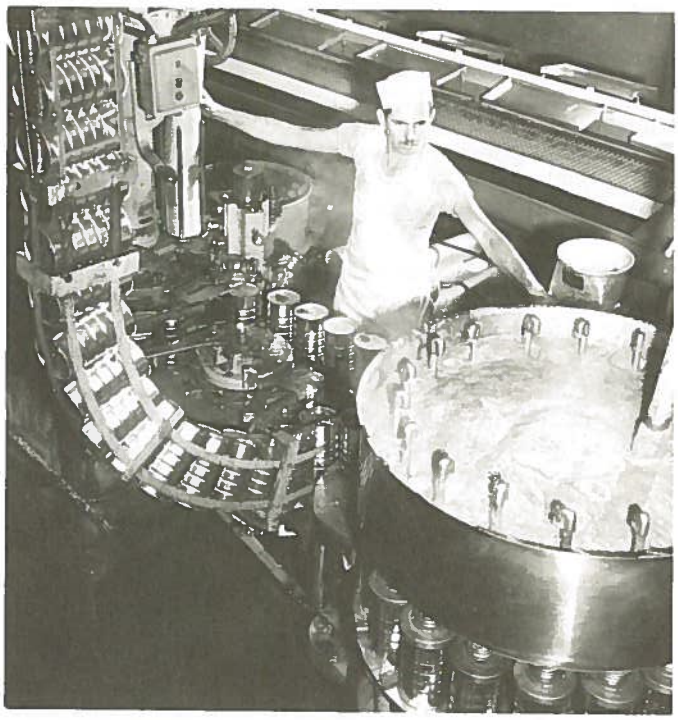
Frankness requires admitting that, as of the mid-1970's, the U.S., along with other countries, has not made great accomplishments in improving the "partake-together" market sharing of food. Unemloyment has grown and proves hard to correct. Sizable fractions of the populations of various nations remain almost excluded from the commercial trading economy.

Internationally, trade in food and other products is increasingly subject to restrictions or confined to regional trading blocs, or—the most recent event—linked into international schemes for recycling petrofunds. The growing scarcity of raw materials, not only petroleum but bauxite, phosphate, copper, and a dozen others, is reshuffling power and economic balances among nations.

Furthermore, international trade in some farm products, notably grain, has lost almost all semblance of open market transactions. It has become, in fact if not in name, state trading.[2] Only the U.S. attempts to retain the image of private market trading, but it is difficult for one nation alone to "market" trade when all others state trade.

This sobering contemporary account ought not discourage policy-making to improve the market system approach for sharing food. On the contrary, it should serve as a reminder that the first priority is to correct weaknesses and generally improve the market system. Not only does market trading still control the food consumption of the vast majority of the world's population, but success in improving it would help hold the noncommercial (concessional) sharing of food to manageable proportions.

[2]State trading—Business transactions by a monopoly agency set up by the state or authorized for negotiation of trade agreements, purchases, or long-term contracts with foreign governments.



As food processing and retailing become more concentrated and are gradually absorbed into conglomerate firms, issues about making the system more competitive grow more inflammatory.

ANOTHER WAY WE SHARE OUR FOOD—THE NONMARKET SYSTEM

The second definition of sharing is to give or grant. Within and among nations, some food has long been made available outside of normal commercial trading. It can be sold at reduced prices, or distributed free to those unable to pay for it.

The failure of the market system to meet all food needs and the deteriorating condition of that system are enough to justify directing attention to nonmarket sharing. Because so many deeply felt issues are involved, the rationale for nonmarket sharing will be reviewed briefly.

The difference between market and nonmarket sharing of food could be made to appear sharper than it is. Not only does any improvement in the market process reduce the need for nonmarket activity, but insofar as national action is involved, policies for the two may be intertwined. The latter can especially be true on the international scene. If foreign trade becomes less market governed and more negotiated and tied more tightly to prices and financing in mineral trade, U.S. programs for food aid to other nations will be wrapped up in the commercial trade bargains that are made.

U.S. ability to grant food aid may be a bargaining instrument in commercial trade compacts, particularly for minerals.

Who Needs It?

1) "Acts of God": The first category of need for nonmarket sharing of food arises from natural disasters. Often called acts of God, events such as earthquakes and floods victimize thousands or even millions of human beings who must then depend on outside assistance for survival. Exceptionally severe droughts can have the same effect.

2) Variations in Human Capacity: Even when all else is favorable, a sizable part of the population of any country is unable to provide for its own needs. The most obvious examples are the young, the old, and the physically or emotionally handicapped. These can only be supported by the social unit of which they are a part. Historically, the unit was the extended family or tribe. With widening social and economic intercourse the unit has increased in size. Indeed, the heart of the issue of sharing food is how far the unit of sympathy and support now reaches. It could be global.

But there is another contingent whose situation is less obvious and therefore even more of a test of philosophical and moral values. These are the many persons who are at least partly employed but not able to earn incomes high enough to provide adequately for themselves and their families. Some are handicapped by their own limited talents, while others run into bad fortune. The moral question is the extent to which an individual should be left a victim of his own limited talents or of chance events. Should he be deprived of adequate food for himself and his family?

3) Acts of Man: Acts of God and even individual human handicaps are relatively easy to comprehend. In general, food sharing has been generous where natural disaster is involved. The record is less clear in correcting for human handicaps, but at least the more visibly handicapped persons have been helped.

The worst aspect of the issue relates to acts of man, especially acts of man collectively. Despite the rhetoric of how each individual must "make it for himself" all human beings are caught in instututional systems over which they individually have no control. The circumstances may be favorable or unfavorable, but they can be controlling.

Against this backdrop we find the range of attitudes and issues about which opinions divide so sharply.

We can begin with human sympathy. The human being is possessed of a bond of sympathy. Charity born of sympathy is a powerful motivation. However, it seems to be expressed more freely in proportion to severity of need, and in proportion likewise to geographic or cultural closeness. A devastation such as an earthquake in Chile or flood in Honduras brings forth an outpouring of aid. A lesser crisis may be acted on if it is close to home but not if it lies far off in Asia or Africa. However, modern communication media such as television have increased our awareness of privation in distant places.

Perhaps the next level of expressing charity relates to the extreme unevenness of wealth and income situations into which individuals are born, even within a single country. Few persons deny that wide differences exist, or that they affect the opportunity for individuals to participate fully in a market system for sharing food.

A sizable part of the population of any country is unable to provide for its own needs. The most obvious examples are the young, the old, and the handicapped.

How Shall We Do It, Or Why?

1) Sympathy, National Sovereignty, and a Nation's Foreign Affairs: All men have some cultural bond, and in a global sense all share the earth's resources, but the world's population has grouped itself into separate nations. Each nation has sovereignty. It has not yet delegated any sizable part of its sovereignty to international bodies.

In large measure, policies for nonmarket sharing of food are made as national policies. The nation is the unit.

Is there a universal sense of justice that leads mankind to share food across international boundaries? Is justice violated if people of the western world consume several times as much of the world's scarce resources, per capita, just to keep themselves fed? We could add, to overfeed themselves, for in prosperous nations overeating is more common than undereating. One estimate is that people in the western industrialized world use as much as five times as many resources per capita as the people of poorer countries.

Hardy Europeans came to North American shores and occupied a virgin land. They soon put up immigration barriers to halt further influx of some nationalities and sharply slow that of others. Thereby they reserved for themselves a disproportionate share of the Earth's food producing resources. Do their descendants bear a burden to share some small part of the bounty they inherited?

National governments have a choice in their policy posture: are they to act considerately, even charitably, in their relations with other countries, or on the basis of power alone? The question applies directly to food. Is a nation to use its food producing resources in an attitude of good will for tradeoff bargaining with other sovereign peoples? Or are we to employ food as an instrument of power much like a weapon?

Even if our nation prefers more considerate international relationships, we must acknowledge the difference in viewpoint between those who need food, and those who have food to share. The former feel the desperation of their plight. The latter know their favorable bargaining position.

Although the U.S. has been the most generous nation in the world in sharing its food with poorer countries the last two decades, we have seldom done so for wholly unselfish reasons. Apart from wanting to get rid of our surpluses, we have hoped for gratitude and political allegiance. The former was predictably denied us; the score is not in yet on the latter. But neither has our national policy been unfeeling or based entirely on power-centered national interest. The motives have been mixed, the record uneven.

2) Food as a Policy Tool: During a brief euphoria in the late 1960's, there was wdidespread hope that the food problems of the various nations were on their way to solution. Progress was made in meeting the food needs of poor families of well-to-do nations. The Green Revolution, plus growing international trade, offered hope for poorer nations.

The picture turned darker in the 1970's. The world population-food balance promises to become critical in years ahead and some 40 developing nations face the prospect of an annual deficit of about 75 to 80 million tons of grain by 1985.

In this situation, arguments tend to drift away from human sympathy and charity, toward our using food as a power tool. The prospect is that policy will not be made on the basis of either extreme—neither pure sympathy, nor pure power. The U.S. is so influential in world affairs that its extending food aid cannot be divorced from its other relations with recipient countries. But it is not so influential that it can flaunt its food resources as a device of overwhelming power.

It is probably a natural tendency for any strong and proud country to overestimate its standing and power—and be insensitive to the slow erosion of both. The U.S. may be making that error now. Evidence indicates our nation is steadily becoming more dependent on other nations for raw materials, and many of the supplying nations are developing nations. The U. S. and other industrial nations have grown dependent on the minerals of some 100 developing countries to provide an important part of their industrial and agricultural needs.

So the terms of sharing are changing. The U.S. will likely retain its capacity to share its food but at the same time, the U.S. will increasingly seek to share—and to have shared with it—the world's mineral resources.

Another element in this new equation is the growing skill of the possessing nations to control their stock of those resources. They too have the choice of using their resources as an instrument of mutually beneficial trade or of power.

As the terms of international relationships change it is hard to estimate their exact impact. But they make it clear that the U.S. is no longer in such a dominant, overlording position that it can unilaterally, without fear of retaliation, control the flow of food from surplus to deficit nations of the world.

This is the atmosphere in which our food aid policies toward other nations will be determined.

DOMESTIC POLICIES FOR NONMARKET SHARING OF FOOD

The U.S. and most advanced countries have accepted some public responsibility to provide food for their disadvantaged citizens. However, debate continues over whether these policies result in the "right" programs and whether benefits are adequate.

Alternatives aside from denying any aid, are principally those of 1) family assistance plans or 2) food aid as such.

Although no food aid or income supplement may belong in a complete list of alternatives, denial of all aid is hardly realistic in a highly developed, socially conscious country such as the U.S. The rationale presented above for nonmarket sharing has become an accepted basis for social programs carried out over the past 40 years or longer.

Family Assistance Plans

Present income programs include Old Age and Survivors Insurance, unemployment insurance, direct assistance programs such as Aid to Families of Dependent Children (AFDC), aid to the blind and disabled, and others. The first two depend in part upon contributions from the individuals covered and their employers. The contributions are supplemented by transfer payments from general governmental revenues.

Income sustaining programs have become large. They increase further during economic recession.

Many of these programs are administered and at least partly funded by the states, so they vary considerably state by state. Proposals have been offered for more comprehensive, integrated and standardized income maintenance programs, such as a Family Assistance Plan (FAP) or "negative income tax." In addition, a plan such as the Family Assistance Plan may contain improved work in-

Present income programs include Old Age and Survivors Insurance.

centives, job training, and child care for recipients, and would remove the condition in the AFDC program which contributes to family breakup.

The proposed new or revised programs are not intended to replace those which depend in part on employee contributions. As of mid-1975, no new federal legislation had been enacted.

General transfer payments only increase purchases and consumption of food to the extent that families choose to allot them to food. Partly for this reason, a number of programs have been food-specific (see food aid below). However, proponents of the direct cash approach would argue that recipients receive satisfaction from a wider range of consumption choices when aid is not food-specific.

Food Aid

Food aid, or supplementary food programs, now consist of basic child nutrition programs and the food stamp plan. The number of participants and costs are shown in Tables 3 and 4 in Chapter 2. However, in mid-1975 a few areas were still receiving packaged commodity foods; a new pilot special supplemental food program for women, infants and children had been introduced, and a "feed the elderly" program was expanding.

Although these programs are food-specific, they do not increase food consumption in proportion to their cost. To some extent the participating families substitute the subsidized food for their normal food spending. The USDA estimates, for example, that of the federal contribution to the face value of food stamps, only about 60 percent represents a net addition to families' food buying.

Not all factors that interfere with our citizens' getting a good diet are economic. Society, however unintentionally, creates social pressures, peer-group standards, and stigmas that affect patterns of food consumption. Ignorance of nutrition also is a negative factor. Programs of action can range from education to restricting advertisements that discourage good nutrition. The Expanded Food and Nutrition Education Program is a special activity of the federal-state extension service in which lower income families are taught principles of nutrition and food preparation. Although not confined to families receiving food aid, one objective is to help those families use their increased food buying power wisely.

Aside from the choice of the kind of program to help disadvantaged persons get food, the question arises as to determining cutoff points in eligibility for aid, and level of aid. In 1975, these are the controversial issues in food stamps, not the nature of the program itself.

INTERNATIONAL POLICIES FOR NONMARKET SHARING OF FOOD

Policies to help relieve the food problems of poor countries divide along two separate paths. One is to give technical and other developmental aid enabling those countries to improve their ability to obtain food, either by producing it themselves or being able to buy it on the world market. This kind of help is longer term. If successful, it would have the advantage of helping those countries to participate fully in the market system for sharing food.

The other path is to continue concessionary food aid—grants and donations.

The Historical Record

For more than 20 years the principal U.S. vehicle for food aid has been Public Law 480 and its subsequent renewals. In those two decades, concessionary sales, barter, and grants of food and other farm products under P. L. 480 totaled nearly $26 billion (Table 1). Of this, over $12 billion represents sales for local currency,[3] $4.3 billion were sales for dollars under long term low-interest credit, $1.7 billion barter, and $4.9 billion as grants and donations. Shipments under Mutual Aid authority were an additional $2 1/2 billion. Nearly all the concessionary exports were "food"—foodstuffs and feedstuffs. Cotton and tobacco were only a small part.

By the end of the period, concessionary exports were small relative to commercial. In 1974 commercial sales totaled 22 billion while P. L. 480 deliveries were only $800 million. Of this $488 million were sales for dollar credit and $272 were grants and donations.

Early in 1975, however, the concessionary shipment rate was stepped up and for the fiscal year 1974-75 total deliveries were expected to be around $1.2 billion. Almost all the increased deliveries were sales for dollar credit. But even at the newly increased concessionary sales rate the U.S. was selling 25 times as much farm products commercially as for P. L. 480 dollar credit, and 70 times as much commercially as it was giving in grants and donations.

Technical Aid

Ever since Point IV[4] was begun, the U.S. has engaged in governmental programs to carry technical knowledge to developing nations. In addition, a number of pioneering privately sponsored programs conducted by foundations have done the same thing.

The technical aid has not been confined to agriculture. A common mistake is to believe the central focus of U.S. technical aid has been to improve the agricultural productivity of poor countries.

An even worse error is to assume that only by adding to their agricultural capacity can those countries solve their food problems. In many cases, the more promising opportunity is to develop their industrial capacity, thereby increasing their ability to earn exchange for buying food in world trade. Such industrial development was, in fact, a major goal of U.S. technical aid for many years. P. L. 480 was seen as a companion. Though treated as essentially a food aid program, P. L. 480 gradually came to provide a food base for industrial development in a number of recipient countries.

[3]Local currency sales--involves non-conversion of local currency. The local money is left within the food—receiving country for use by the U.S. within that country, or it is made available under various loan programs to borrowers within the country.

[4]Point IV—foreign aid technical assistance program starting in 1950.

TABLE 1. U.S. Concessionary Exports of Agricultural Products, 1954-74

Year	Public Law 480						Mutual security aid
	Sales for foreign currency	Long-term dollar credit sales	Grants and donations		Barter	Total	
			Gov't to gov't.	Voluntary agencies			
	million dollars						
1954*	——	——	28	20	22	70	211
1955	263	——	56	186	262	767	351
1956	638	——	65	187	372	1,262	449
1957	760	——	39	175	244	1,218	318
1958	752	——	43	159	65	1,019	214
1959	732	——	32	111	175	1.050	158
1960	1,014	——	49	124	117	1,304	157
1961	878	1	93	151	181	1,304	179
1962	1,006	42	81	178	137	1,444	35
1963	1,161	52	99	160	37	1,509	11
1964	1,233	97	62	186	43	1,621	23
1965	899	152	73	180	19	1,323	26
1966	815	239	79	132	41	1,306	47
1967	736	194	108	179	13	1,230	33
1968	540	384	101	150	3	1,178	11
1969	337	428	103	153	——	1,021	n.a.
1970	276	490	129	126	——	1,021	12*
1971	174	518	138	152	——	982	87
1972	70	661	2367	141	——	1,108	45
1973	4	542	118	91	——	755	113
1974	——	488	132	140	——	760	37
Total	**12,288**	**4,288**	**1,864**	**3,081**	**1,731**	**23,252**	**2,517**

* July-Dec. only.
Source: *Foreign Agricultural Trade of the U.S.*, Economics Research Service, U.S.D.A., April 1975, p.12.

The Policy Choices

Food and technical aid policies need to be kept under review, and modified as necessary in view of changing conditions. This may result in either continuation of present policies or selection of new policy alternatives. The choices currently open to the U.S. are 1) no food aid, 2) no technical aid, 3) food aid, 4) technical aid, 5) changed consumption patterns.

1) **No food aid:** There is little question about providing emergency aid to victims of earthquakes, floods, or severe local droughts. Also, most U.S. citizens are willing to help the mass victims of inhumane acts of man, as the refugees in Biafra or the Pakistan-Bangladesh war of a few years ago.

Even though situations are desperate and call for large supplies of food, the tonnages involved are small, compared with the quantities required to bring the diets of the world's undernourished people up to a minimum acceptable level. According to Robert Tetro of the Food and Agriculture Organization of United Nations, a half billion persons in the world are significantly undernourished. To fill their food deficiency even part way would be a vast undertaking.

To deny shortrun emergency aid would be unacceptable to many U.S. citizens. But citizen response to the amount of aid of the long run type will depend much more on the availability of food supplies and cost of aid. Obviously, to give no aid is costless but such a policy may have adverse long run consequences for the U.S. leadership position in the world.

2) **No technical aid:** Unless actually banned by law, a certain amount of U. S. technical aid will probably be available in one form or another. Activities of the multinational corporations, which continue to locate in food deficit countries, may alone contribute much to technological development, increasing the capacity of the country to either produce food or acquire foreign exchange for buying food.

Ending technical agricultural assistance by our government would appeal to those persons in the farm sector who view this activity as contributing to their competition for markets abroad. As is true for investment abroad, this has a short-run and a long run effect. In the short-run, some markets for agricultural products may be reduced; but in the longer run, increased food production will contribute to general economic development, which will likely result in expanded trade in U. S. food products.

3) **Food aid:** In contrast with emergency relief, the amount of food aid required to bring all undernourished citizens of the world to a minimum acceptable level of living would be tremendous. A simple response would be that aid of this magnitude would be too costly to U.S. citizens, who would be faced with somewhat higher food costs at home as a result of massive food aid, and to taxpayers, who would be required to pay the bill. Not only is it costly, but also it may not always contribute to long run solutions to the problem. Twenty years of experience with granting food aid has shown that dependence on food aid may permit a country to underinvest in its own food production and continue to discriminate in other ways against development of the agricultural sector.

Depending on how they are distributed internally, large imports of food in the form of aid may reduce agricultural prices in the recipient country so that incentives for expansion of agricultural production are reduced. This raises the question of, "How can food aid be distributed to recipient countries without harming the incentives to food production within those countries?" So long as food goes to destitute families, no problem arises. But if food is made available government to government on a concessionary basis, it is difficult to assure that normal local trade in farm products and food will function without interference.

Two other questions are involved in granting food aid. How should food aid be allotted among countries? Should food aid be strategic or humanitarian? In the last couple of years there is some evidence that the U.S. Department of State has tended toward administering P. L. 480 as a power arm in foreign affairs. Leaders in the Congress have looked with favor on meeting the more critical human needs. In 1974-75, Congress enacted legislation directing that the latter food aid objective be given considerable weight in food aid policy.

Should any commitment to food aid be buffered by building up reserve stocks of the more important foods, primarily grains? And if stocks are desirable, should the U.S. acquire and manage them or should there be cooperative action by several countries? In the latter case, who should finance them, who should hold them, and who should control their acquisition and release?

These are difficult questions. The agriculture committee of the National Planning Association has recommended that a program of reserves should be multinational, but the U.S. should move ahead on its own if cooperation is not readily achieved.

It is evident the reserve stocks issue will be one of contention if food supplies remain comparatively short. But if the U.S. and other exporting nations should again find themselves with "surpluses," reserve stocks will likely be reaccumulated without being triggered by a specific food aid policy.

4) **Technical aid:** The U.S. still has virtually boundless possibilities to contribute to the advancement of the agiruclture of other nations.

It can only do so, however, if it can change the direction and focus of its aid and can convince other countries to do the same. Many feel, much more than in the past, that it must be aimed at the world's smaller farmers.

The amount of food aid required to bring all undernourished citizens of the world to a minimum acceptable level of living would be tremendous.

Much of the new technology recently introduced in developing countries is best suited to the 12-15 percent of the world's irrigated agricultural land. Technology for irrigated land is now reasonably adequate but technology for areas of uncertain and limited rainfall is inadequate.

The shackles of the small farmer have all but been ignored. In the past two decades, a principal factor that has restrained agricultural production in developing countries is the insecurity involved in decision making by small farmers as they accept the risk involved in moving from time tested methods of production.

Farmers place a higher value on meeting their families' subsistence needs and on following traditional practices with a sense of security, than on increasing production to meet national objectives.

Although some countries have improved the terms of tenure, in general, the small farmer is still at a disadvantage. The basic agricultural resources--land and water--are not equitably available to him. The small tenant farmer finds the more he invests and the harder he works, the larger the share going to the landlord, leaving little incentive for him to increase his production.

If the small farmer is to improve his yields, he must be aided with agricultural technology consistent with his resources and abilities to apply and manage it. That technology must be labor-intensive. It must not rely too heavily on purchased inputs. Land tenure arrangements should provide an incentive to the man who tills the soil to invest in better production methods. Markets need be trustworthy and backed by price policies which protect the farmer's investment—including a shield against losses in bad crop years. This must all be done in such a way as to convey trust.

Although the U. S. appears to be well equipped to contribute to expanded world food production through further extension of governmentally supported technical aid to food deficit countries, several questions and issues remain. U.S. agricultural research and development capability has made an enviable record. Much has been learned from 30 years of experience with various forms of technical assistance which should be useful in organizing to expand technical aid. But it is continually necessary to review these questions in view of changing circumstances: How much technical assistance should be provided? How should the extension of aid be organized? Under what conditions should the aid be offered?

In determining how much technical aid should be offered, a closer look needs to be taken of the payoff of technical aid versus direct food aid. There is evidence that the payoff is greater for the former, particularly in the long run.

An organization with a longer run focus is needed to deliver technical aid. Some of the proposals before Congress would create an international dimension to the Land Grant institutions.

From the donor viewpoint, it may be desirable to require positive programs for investment in agriculture and a pricing system which gives incentives to producers. The most common exhortation-cum-mundate has been related to population control. The P.L. 480 program of a decade ago, for instance, had stern terms requiring effective efforts toward limiting population before a country could qualify for P.L. 480 food. But they were not enforced and probably could not be universally enforced. Attaching strings has merit but feasibility must also be considered.

5) **Change consumption patterns:** Another alternative, which if put into effect could increase the amount of food available for food aid—either domestic or foreign—is to change consumption habits. If consumers in developed countries could be persuaded to change their high resource using consumption habits, more food could be released for other uses.

By any standards, the consumers of the U.S. and similar countries are well fed. Many eat too much. They use resources at a rate several times higher than consumers of poor countries. If the decision is to make more food available as aid, it could be withdrawn from our channels without having much more effect than reducing the amount of grain fed beef or salad oil consumed.

Voluntary self-denial will not alone assure that the equivalent of food not eaten will actually find its way into domestic or foreign food aid. But a national program of food aid could divert food effectively into foreign aid shipment. In other words, government procurement working through the price system could direct food into aid channels, and the price system would discourage production and consumption of some of our more costly foods.

Frequently, discussions of changing consumption patterns underemphasize two important points. One is that food is being singled out for attention when in fact rich nations also consume a disproportionate share of the housing, transportation, health facilities, and most other goods of the world. The other is that the problem is more one of a transfer problem than it is one of changing consumption patterns. Are rich countries willing to tax themselves sufficiently to finance acquisition of food to benefit persons in other nations? And which rich countries? Not just those with abundant food, presumbably.

These questions lead to the further question of how other nations, individually or jointly in an international organization, can be induced to share responsibilities. At the November 1974 World Food Conference held in Rome, the proposal was that new international organizations be formed to facilitate food aid and technical assistance programs. It was also hoped that newly-rich petroleum exporting nations would join in financing the food aid.

Population Control

The population issue has been deemphasized in this chapter. This has been done, first of all, because it is a longer term issue. The need for food for hungry people today is a consequence of population policies—and a host of other policies too—of past years, not of the present.

Population has not been featured, secondly, because if the population-food balance today reflects extremely uneven food distribution (poor "sharing"), stopping population growth would not of itself rebalance population and food.

Thirdly, population control is an entirely different "kettle of fish" from food production and marketing. It is not as amenable to governmental control in the same manner as food distribution. In blunt words, the U.S. cannot effectively force other countries to control their population. Maybe they should not try to do so by pronouncement. But it should do all possible short of attempting to decree.

This does not minimize the importance of controlling future growth of population. It must be accomplished. It will be accomplished—either through farseeing courses of action or by violent upheaval. Population control is necessary even though it will not by itself solve the world's food problem. The other steps indicated herein must also be taken in whole, or selectively.

Most of all, if the U.S., as a generous but prudent nation, seeks to help alleviate the food problem in other parts of the world, it dare not weld an iron linkage to population control admonitions. Each is proper to U.S. policymaking; but each is a territory of its own.

Consumers are concerned about the food they eat. They question the safety of the food, its nutritional value and quality. Their concern is aimed primarily at problems associated with food additives, pesticides and other contaminants.

Government agencies are responsible for establishing and regulating standards that help assure food safety to consumers. The government is also responsible for inspecting meats produced in the United States and meats imported from foreign nations. In addition, industry and the consumer both have roles in providing safe, nutritious, good food.

Personal preference determines foods chosen and therefore the nutritional value of the diet. Food patterns have changed so there is increased consumption of meat and poultry, soft drinks, prepared desserts, and alcoholic beverages, and decreased use of green and yellow vegetables, dairy products and grains.

4. WILL IT BE GOOD AND GOOD FOR YOU?

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In terms of quality and abundance, the American food supply is unsurpassed anywhere in the world. However, consumer interest seems to be on widely varying food problems. Perhaps consumers are concerned about the food they eat because of their decreasing involvement in its production and preparation.

Reports on unsanitary conditions in food processing plants, worry about chemicals in foods, and botulism scares have been well-publicized. Surveys indicate there has been a shift to foods that provide fewer nutrients.

Just what are the major concerns about food safety and quality? What is the current nutritional status of the population? Who safe-guards our food supply? And what alternatives in public policies do we have?

To answer some of these concerns this chapter will focus on current major issues of food safety, nutrition, and food quality (as a separate factor from safety and nutrition). Also, included are: who protects our food, the role of the consumer and public policy issues in consumer protection. Each of these issues is discussed in a separate section, followed by sections on the groups and agencies responsible for these concerns and some policy alternatives.

Appreciation for counsel is extended to Norbert A. Dorow, North Dakota State University, Marguerite E. Krackhardt, University of Delaware, F. T. Marayama, University of Kentucky, Marilyn Purdie, Mississippi State University, Louis F. Norwood and Evelyn Spindler, Exetension Service, U.S.D.A., Kenneth Carl, Oregon Department of Agriculture and President of the Association of Food and Drug Officials, Ranzell Nickelson, II, and Edward E. Burns, Texas A & M University.

PART I: SAFETY

A 1972 Food and Drug Administration (FDA) survey revealed that consumers thought food was the safest among five product categories—food, toys, cosmetics, prescriptions, and non-prescription medicines. However, more than one-third indicated that foods were becoming "less safe." This reduced confidence reflected in the survey shows concern for pesticides, food additives, the food manufacturing process, food containers, sanitary conditions in processing plants and ready-to-eat foods.

Part of the consumers' anxiety about food safety is due to changes in foods. People are eating less of the basic foods and more formulated convenience foods. Less is known about the source and composition of these foods.

One of today's challenges in food safety is determining the significance of the extremely low level of objectionable materials detected in food as a result of improved analytical methods. At this point, the ability to generate data on the presence of trace components in foods has outstripped the ability to evaluate the significance of these components.

FOODBORNE ILLNESS

Concern over food additives, pesticides, and related problems has directed attention away from the hazard government officials rank as the No. 1 food problem today—bacterial contamination.

Foodborne illnesses are caused by eating food containing certain bacteria or the poisons they produce. There are three major types of disease-producing bacteria:

1. *Salmonella* is an example of living bacteria that produce illness when ingested. These bacteria are killed by heat.
2. *Staphylococcus aureus* and *Clostridium botulinum* are toxin or poison producers.
3. *Clostridium perfringens* may produce heat resistant spores that multiply under optimum conditions and cause illness.

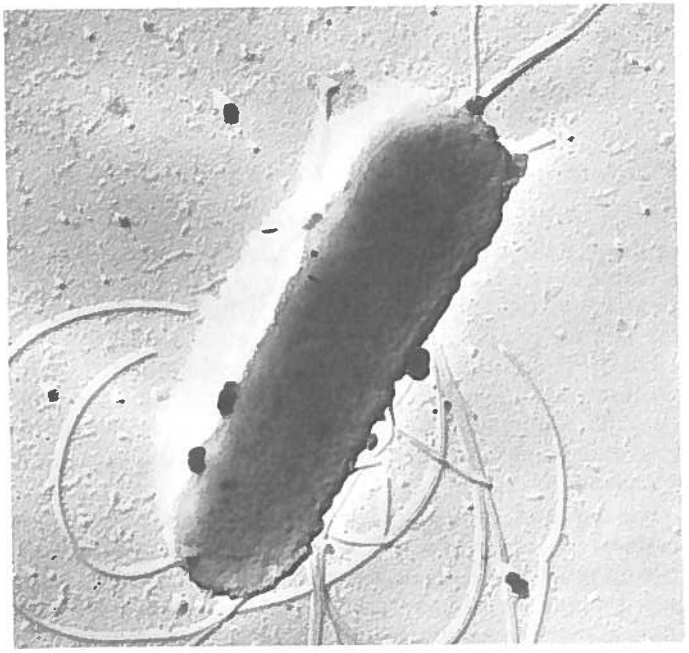
These illness-causing bacteria are of everyday concern. They present a potential hazard each time food is prepared, handled, or stored, with many reported cases being traced to food prepared in the home.

Although unpleasant, most foodborne illnesses are not fatal. However, particularly susceptible persons such as infants, the elderly or those persons with chronic diseases have died from salmonellosis (one of the foodborne illnesses). Although occurring very infrequently, *Clostridium botulinum* toxin is often a killer.

Foodborne illness is costly to the victim and to the community. An economic analysis of a recent outbreak of salmonellosis involving 125 people in a small town in Minnesota estimated a total cost of $28,733, including lost salaries and productivity, medical and hospital expenses, cost of the investigation, and economic impact on the local restaurant owner.

There are an estimated two million cases of salmonellsis each year in the United States, but many cases of this and other types of foodborne illness go unreported due to lack of consumer awareness and physician concern. The total cost to the nation each year is estimated to be in the millions of dollars.

Federal, state and local inspection laws are designed to guard against foodborne illness caused by bacteria or their toxins present in foods because of improper food handling or processing. Nevertheless, the incidence of foodborne illness continues to be of concern. Health Department budget constraints, limited investigation and laboratory capabilities contribute to identification problems.



Disease producing bacteria in food cause illness.

FOOD ADDITIVES

Food additives are of concern to consumers. They may be added during processing, or become part of the food as it's grown, harvested, stored or packaged. Additives are not limited to artificial or synthetic chemicals but also include many natural substances.

Food additives perform a variety of functions including:

1. Nutritive value—Enrichment of white flour and bread with B vitamins and iron, and addition of vitamin A to margarine and vitamin D to milk are examples.
2. Flavor—Natural flavors are contributed by salt, a wide variety of spices such as pepper, cloves, ginger, and extracted flavorings such as vanilla, citrus, and spice oils.

   —Synthetic flavors, made in a laboratory, may duplicate or resemble those found in natural products. Both man-made and natural flavorings are used extensively in baked goods, ice cream, candy, sausages, and prepared meats.
3. Texture—Emulsifying agents are added to salad dressings to prevent separation. Added to shortening, emulsifiers permit even distribution of fat in a batter, giving lighter breads and cakes, and an even texture to baked products. Emulsifiers are added to a multitude of products including coffee whiteners, chocolate, ice cream, and icings.

   —Stabilizers and thickeners include such vegetable gums as gum arabic, carageenan, agar, and pectin. These give a smooth, uniform texture to many foods, including salad dressings, yogurt, and ice cream.

   —Maturing and bleaching agents are important to the milling industry. Wheat flour in its natural freshly milled state has a pale yellowish tint. Upon storage for several months flour slowly becomes white and undergoes an aging process that improves its baking qualities. Compounds such as oxides of nitrogen, chlorine dioxide, nitrosyl chloride, and chlorine are used to accomplish the "whitening" and "aging" in a short time.

   —Moisturing agents or humectants prevent drying out of foods like coconut and candy. Examples are glycerine and propylene glycol.

4. Spoilage Prevention—Preservatives are added to food to inhibit microbial growth. Vinegar, salt, and sugar have been used for centuries. Sodium or calcium propionate inhibits mold growth in breads. Benzoic acid or sodium benzoate is used to inhibit bacterial or mold growth in oleomargarine, certain fruit juices, pickles, and confections. Sodium or potassium sorbates are anti-molding agents used in cheeses, syrups, and pie fillings.

   —Antioxidants help prevent off-flavors in food resulting from oxidation of fat.

5. Color—Coloring, designed to enhance eye appeal, is added to a great many foods including maraschino cherries, cheese, margaine, butter, and various desserts.

One of the reasons for consumer concern is that increasing amounts of additives are being used in foods. In 1965, Americans were eating about three pounds of additives per person per year; in 1970, an estimated five pounds were used. This amount is small in view of the total amount of food consumed per person. However, it may continue to grow as more and more processed and prepared foods appear on the market.

Responsibility for the Safety of Food Additives

The FDA has responsibility for the safety of food additives. The Food Additive Amendment of 1958 states that any newly proposed additive must undergo strict testing designed to establish safety for the intended use. This testing (a proof of safety) must be done by those who are petitioning to use the additive.

Prior to the Food Additive Amendment, pre-testing was not required. The government was required to prove in court that the additive was poisonous or injurious before regulatory action could be taken. Shortly after the enactment of the 1958 amendment, FDA published a list of food additives which qualified scientists generally recognized as safe under the conditions of their intended use. This classification of "generally recogoized as safe" (GRAS) may be made on the basis of data derived from scientific procedures, or, in the case of substances used prior to 1958, on the basis of experience drawn from common and safe use in food.

Two developments have occurred that directly affect the classification "generally recognized as safe." (1) Toxicity testing has become more sophisticated and we cannot rely on the lack of reported human adverse effects as sole measure of safety. (2) The demands of modern technology have increased the use of certain "GRAS" items well beyond the use patterns of ten years ago. An example of this was the greatly increased consumption of low calories drinks containing cyclamates (before they were banned).

As a result of new developments, all food additives on the GRAS list are being reviewed by scientists. This is a massive, complex undertaking, and when completed will be the most comprehensive study of the safety of food additives ever made.

CONTAMINANTS

In addition to planned functional additives, there are unplanned or incidental additives. These are contaminants which may enter foods at any stage of production, processing and distribution.

Some non-poisonous contaminants which may be aesthetically offensive (such as rodent hair and insect parts) cannot be completely avoided by "Good Manufacturing Practices." The FDA sets standards for "good manufacturing practices" based on surveys made of existing industry production processes. These guidelines are used both by industry and FDA.

FDA has established guidelines to instruct enforcement personnel exactly "how much" or "how many" contaminant particles constitute a violation. There is much misunderstanding about these "Filth Guidelines" because they do not describe a level of contamination that is average, acceptable, often found, or representative of the industry either at home or abroad. It does represent a level at which enforcement action will be invoked.

PESTICIDE RESIDUES

According to the Food and Agriculture Organization (FAO) and other United Nations organizations, pests destroy up to one-third of the world's potential annual food crop during growth, harvest, and storage. In developing countries losses are the highest. A recent FAO study indicates that greatly increased use of pesticides and fertilizers is among the measures essential for achieving the needed massive expansion of food production to meet population growth.

Most pesticides are water soluble and can almost be elminated by washing. However, if pesticides are used, some may be present in the food at the time of consumption. At one time this might not have been detected but present analytical methods are so highly developed they are capable of measuring minute quantities of materials. What was thought to be zero now is measurable parts per million, parts per billion, or parts per trillion.

Regulatory Activities for Pesticides

All pesticide manufacturers are required to register their labels with the Environmental Protection Agency (EPA). In order to qualify for registration the pesticide must be effective in controlling the pests for which it is intended, and safe for people and animals if used as directed.

The EPA has the responsibility of regulating the manufacture, sale and use of pesticide products. EPA samples pesticide chemicals to verify label claims concerning effectiveness and safety, and investigates possible misuse of pesticides.

The amount of pesticides in food is controlled and checked in two ways. First, the EPA has established maximum limits of pesticides (carefully established with regard to human safety) which are permitted on food. The Food and Drug Administration has the responsibility of enforcing these tolerances.

Pesticides are important if food production is to meet population growth.

The second check is known as the "Market Basket Survey" or "Total Diet Program." Market Basket samples, comprised of 117 kinds of food from five regions in the United States, are examined every two months by the FDA. The food is analyzed for pesticide residues after it has been prepared.

A published compilation of five years of data indicates that pesticide intake is well below that regarded as safe by the FAO/WHO Expert Committee (Food and Agriculture Organization of the United Nations/ World Health Organization).

NATURAL TOXICANTS

If all chemicals that find their way into our food as contaminants were eliminated, would this mean no toxic compounds would be present? Although less well known, many of our common foodstuffs contain toxic components before they are processed — often at levels higher than those which would be approved for a similar food additive. It would be impossible to avoid all normal components and natural contaminants in our foods but those found at levels which are hazardous should be recognized.

The most familiar examples are poisonous mushrooms and shellfish at time of "red tides." Ordinary Irish potatoes that are exposed to light and start to green may contain considerable amounts of solanine.[1]

Human poisoning has rarely occurred from this source because small amounts are safe. However, a new variety of potatoes had to be withdrawn when it was discovered to be higher than usual in solanine.

The most common natural contaminants in foods are the products of molds. These are "natural" in the sense that molds are present when the product is produced and then may grow despite man's efforts to control them. The mycotoxins[2] are a large group, some of which have long been known to cause livestock and human poisoning and others whose ability to produce illness in humans is not yet proven.

Aflatoxins (one of the mycotoxins) belong in this latter category, although there is evidence that high intakes are harmful. Discovered in 1960 to be the cause of death of turkeys fed modly peanut meal, aflatoxins have been recognized as problems in moldy nuts and grains. FDA has established a legal standard so peanut products containing more than 20 parts per billion of aflatoxin are removed from the market.

Man has done much to control natural toxicants. The cottonseed pigment, gossypol,[3] has been long recognized as toxic. Plant breeders have now given us cottonseed varieties which are glandless and thus free of this pigment.

Processing methods have also been developed that greatly reduce the gossypol level. This is particularly important as plant protein sources are used more widely. Expanding capabilities for determining chemical structures and toxicological evaluation promise a more scientific approach to the chronic hazards from foods which contain natural toxic compounds.

MEAT, POULTRY AND SEAFOOD INSPECTION

Domestic Meat and Poultry Inspection

Meat and poultry inspection, under the jurisdiction of the USDA, helps assure consumers a meat supply that is clean, wholesome, healthful, and safe to eat. Inspection involves:

1. Inspection of the slaughter and other appropriate establishments.
2. Ante-mortem inspection. Live animals are inspected for good health before slaughter.
3. Post-mortem inspection. The head, carcass, glands, and internal organs are examined carefully.
4. Inspection of processing in preparation of meat-food products. Procedures, conditions of work, ingredients and labels are specified and checked.

Seafood Inspection

The FDA and the National Marine Fisheries Service (NMFS) have a working arrangement so each agency will discharge as effectively as possible its inspection and standardization activities for fish and fish products.

Continuous plant inspection is on a voluntary rather than a mandatory basis. Processing and packing establishments which are operating under NMFS "voluntary inspection service" contracts are subject to inspections to insure their compliance with good manufacturing practices, labeling, food additives, minimum quality and fill of container as established by FDA regulations.

[1] *Solanine*: A water-insoluble and heat-stable alkaloid found at low levels in potatoes, which increases in sprouting and greening. At high levels, solanine is toxic to humans.

[2] *Mycotoxins*: Compounds produced by molds which are toxic for animals and presumably for man when ingested as a part of contaminated food.

[3] *Gossyopol*: A yellow pigment which is a potential toxin for man, located in "glands" in the cotton seeds.

Inspected products which meet all the requirements of the inspection regulations may carry a "Federal Inspection Mark" which signifies the product is clean, safe, wholesome, and has been produced in an acceptable establishment with appropriate equipment under the supervision of Federal inspectors.

FDA and NMFS work together where either agency believes a violation is occurring. The agencies cooperate in investigations of food poisoning, product recalls, and problems concerning food contamination.

In a number of states the Department of Agriculture, working with FDA and NMFS, cooperates on plant inspection.

Imported Meat and Poultry Inspection

The USDA is responsible for the safety of imported meats. Only those countries having meat inspection systems with standards at least equal to those of the U. S. are permitted to ship meat to the United States.

In 1973, 45 countries had approved facilities to ship meat to the U. S. Products may be imported only from those plants in each foreign country which foreign meat inspection officials have certified as meeting U. S. standards. Thus, not all plants under an approved foreign program are eligible to export to the United States.

Foreign program staff of the Animal and Plant Health Inspection Service (APHIS) reviews operations in certified foreign meat plants and coordinates the activities of the U. S. import and export inspectors. In 1973, twenty-one veterinarians reviewed foreign plants. Plants exporting large volumes and plants having special problems are visited at least four times annually. All other certified plants are visited at least twice a year. Veterinarians check for the same items that supervisory inspectors look for in U. S. plants.

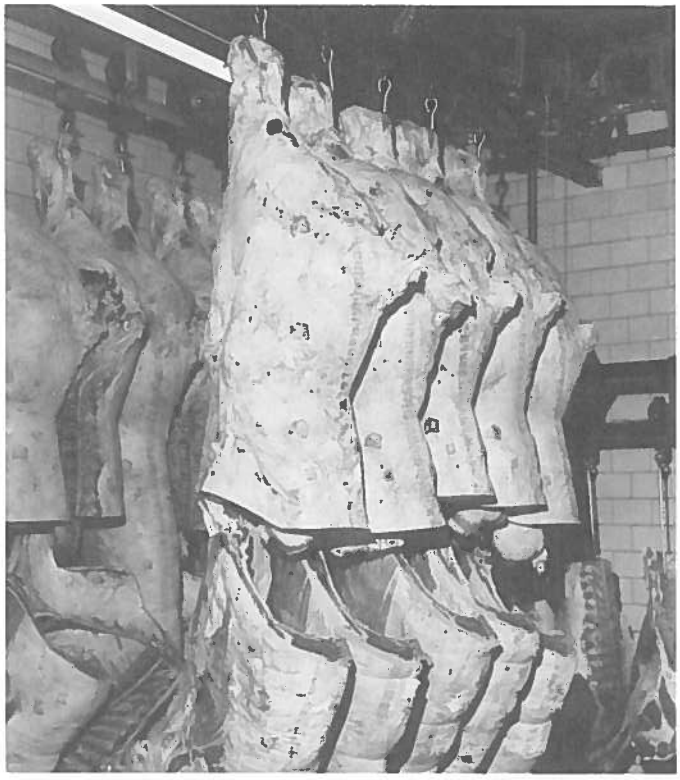
Domestic field inspectors inspect meat at the port of entry into the United States. At the port of entry, part of each shipment is sampled. Samples of frozen products are defrosted prior to inspection. Import inspectors check the condition of canned meat containers and open sample cans for inspection of contents. Labels are verified for prior U. S. approval and the accuracy of stated net weights is checked. Specimens are routinely submitted to meat inspection laboratories to check compliance with compositional standards. Sample cans are also subjected to incubation for signs of spoilage.

Meat imports are monitored for residues, such as pesticides, hormones, heavy metals and antibiotics, by selection of representative samples for analysis by U. S. laboratories.

While no formal report on imports is required by the Poultry Products Inspection Act, these imports are controlled under regulations virtually identical to those applied to meat.

Imported Foods (Other than Meat and Poultry)

The Food and Drug Administration has the responsibility of assuring that all imported foods meet the same requirements as products manufactured domestically and shipped from one state to another. All imported foods are subject to examination by FDA at the time of entry to determine their admissibility. Imports examined by FDA are not released for distribution until a final decision is made as to their suitability for consumption. Greater emphasis is placed on the sampling of foods which are ready for consumption than on those which will receive further processing by domestic manufacturers and are subject to FDA domestic programs.



The USDA is responsible for the safety of all imported meat.

PART II: NUTRITION

How well-nourished are we as a nation? This is a difficult question since there is no way to correlate data collected from biochemical tests, clinical observations, dietary surveys and/or computation of food balances. Standards generally used to determine the amount of food needed to provide adequate nutrition for the majority of a population are the Recommended Dietary Allowances (RDA) established by the Food and Nutrition Board of the National Academy of Sciences—National Research Council. These values are reviewed and revised approximately every five years as new evidence is uncovered.

Nutrition Surveys

Recent nutrition surveys show that most Americans have adequate nutrient intakes and biochemical values above the clinically deficient level. However, marginal levels, which are potentially serious, exist in individuals who are making poor choices of foods or whose low incomes restrict the availability of food. Intakes of iron are low for all groups but the adult man. Other problems related to nutrition are obesity in adults and poor dental

health. The role of nutrition in atherosclerosis[4] and of indigestible food fractions in noninfectious gastrointestinal illnesses will not be clear until more research is done.

Two nutrition surveys were conducted by the Department of Health, Education and Welfare: The Ten State Nutrition Survey in 1968-70 and the Health and Nutrition Examination Survey in 1971-72. Although few clinical deficiencies were revealed, individuals frequently had intakes or biochemical levels for one or more nutrients below that considered acceptable by nutritionists. The most vulnerable age groups are infants and young children, adolescents, pregnant women, and the elderly. Intakes of calcium, vitamin A, ascorbic acid, and iron were likely to be low, especially for the poor. However, adequate protein intake is not a problem. Americans consume far more protein than is needed to meet nutritional requirements.

Food choices are influenced by geographical and cultural factors. For example, the Ten State Nutrition Survey, comparing two groups of Spanish-Americans, indicated that Mexican-Americans in Texas frequently had low levels of vitamin A but Puerto Ricans in New York did not. Although poverty income levels tend to be associated with poor nutrition, high income is no a guarantee that the consumer will be well-nourished. Cultural differences may contribute to differences in levels of nutrition.

There is evidence that our food habits are not improving. The USDA surveyed food consumption in the home in 1955 and again in 1965. In both years, intakes of calcium and vitamin A were frequently below the recommended levels. A larger percentage of households in 1965 (21%) than in 1955 (15%) had food intakes classified as poor. Food patterns had changed so there was increased consumption of meat and poultry, soft drinks, prepared desserts, and alcoholic beverages, and decreased use of green and yellow vegetables and fruits, dairy products, and grains. Sugars and fats increasingly are a larger part of the diet. Thus, there has been a shift to foods that provide less nutrient return for the money spent.

Nutrition in Other Countries

A recent nutrition survey showed that Canadian problems are similar to those of the United States. What of the other countries of the world? The question of "will there be enough food?" must also be followed by the question "will everyone be well nourished?" In developing countries of the world, critical malnutrition (lack of one or more specific nutrients) or undernutrition (not enough food) is found in a high proportion of the poor people. Bouts of diarrheal illness and various intestinal parasites, both major problems in countries lacking good sanitation, add to the seriousness of the situation. Overnutrition (excessive amounts of food) is another form of malnutrition which occurs frequently in developed countries.

Malnutrition is the largest single contributor to the high death rate of children in developing countries. An Indian nutritionist has estimated that 16 percent of the poor children in India have a clinical deficiency of vitamin A which frequently leads to blindness. FAO estimates that 60 percent of the preschool children in developing countries suffer from protein-calorie malnutrition. Severe malnutrition in prenatal and infant life may lead to permanently impaired physical and mental development. Malnutrition at all ages is a *development* problem for these countries.

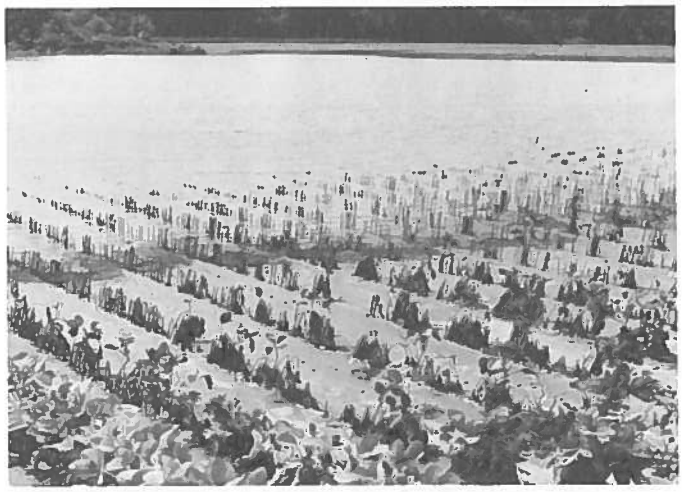
For most of the world, problems of malnutrition result from multiple deficiencies, including energy. When calorie intake is below that needed for the body's energy demands, protein will be used to provide energy rather than for its specialized function of building tissues. A variety of protein foods, as well as adequate energy intake, leads to the most efficient use of protein. Grains and legumes (beans, peas, lentils)eaten together supplement each other and permit more efficient use of the total protein. For people whose diet staple is roots or tubers, protein becomes a more critical problem.

Improving the nutritional status of the presently malnourished depends on availability of foods, social change, economic resources and capabilities. One economist estimated in 1973 that if India's diet were to be brought to the nutritional level of the United States, the cost would be 210 to 280 billion rupees, yet India's total national income was only 400 billion rupees. A second example was that of the nutrition rehabilitation program for children in Haiti. Yearly cost per child was estimated at $40-$75; per capita income in Haiti at that time was estimated at $70 a year.

Problems of nutrition also arise in times of national crop failures due to natural disasters—such as floods or drought—and in wars. Short-term emergencies call for food relief for which specific nutrients are less important than the total food supplies. Aid is usually directed at the groups most vulnerable: pregnant and nursing women, and infants and young children.

Nutritional Changes in Food

Have raw foods changed? Although few studies have been conducted, it appears that raw foods today are nutritionally no different from those of decades ago. What about processed foods? A U. S. survey of nutrients in canned tomato juice and whole kernel corn led to the conclusion that values for both foods were similar to or higher in 1972 than in 1942-45.



Crop disasters, such as a flood, can create nutrition problems.

[4] *Atherosclerosis:* Degenerative condition of the arteries in which lipid materials are deposited on the inner walls and blood flow is restricted.

Nutritional losses occur when food is stored, processed, and cooked. If storage conditions are poor, the loss of certain vitamins will be greater than for processed foods. Some method of preservation is essential if supplies of most foods are to be uniform year-around and in all parts of the U.S. Indeed, newer methods of food preservation, including canning, have less nutrient loss than some of the older methods. Total losses are such that there is frequently little difference among forms when food is ready to serve. There are a few exceptions. Trace minerals and indigestible residue are decreased as foods are refined.

Efforts designed to improve nutritive qualities of foods have been made. A genetic approach may be used to improve the quality of our food supply. Opaque-2 or high lysine corn is a familiar story tempered by the reality of non-nutritional problems of yield and storage life. Wheat and rice yields have increased, and some animal breeds have been genetically selected for efficiency of feed conversion, such as lean meat type hogs.

A shift in eating patterns has made it necessary to add nutrients to the foods now used. Examples are the addition of vitamin A to margarine and three of the B vitamins and iron to white flour. Iodine added to salt and vitamin D to milk have made it easier to regularly obtain these nutrients.

Fabricated foods are those formulated from ingredients not traditionally used in that manner. A product may be designed as a meat replacer. Meat analogs from soy protein are a familiar example. The Food and Nutrition Board of the National Academy of Sciences-National Research Council recommends that such fabricated foods contain (on a calorie basis) at least the variety and the amounts of important nutrients provided by the foods they replace. However, not all trace minerals and vitamins are added. A problem arises if their absence is not recognized and these fabricated foods become a major component of the day's meals.

The limited menu and information offered by a fast-food, drive-in restaurant or vending machine make wise choices difficult if this is the setting for most of one's meals. On the other hand, the magnitude of choice which confronts the consumer in the supermarket may in itself threaten good nutrition. A current FDA regulation on nutrition labeling was designed to help consumers make value comparisons between products—mainly nutritional. This regulation states that all foods for which a nutritional claim is made, or to which nutrients have been added, had to display nutrition information on the labels by July, 1975. The label, following a standard format, gives information on the percentage of the U.S. Recommended Dairy Allowances of protein, seven vitamins, and minerals. Grams of protein, fat, and carbohydrate are given as well as calories.

Proper methods of cooking and storage are essential to retain the nutritional quality of foods.

PART III: QUALITY OF OUR FOOD

Quality is an elusive term. Although difficult to define, it is probably one of the most important factors in influencing consumer buying decisions. Family food buyers may not always consider nutritive value and food safety, but it is almost certain they will consider the food likes and dislikes of the people for whom they are shopping.

Appearance, flavor, color and texture are some of the quality factors influencing people's enjoyment of food. Perception of quality is influenced by many factors, including personal preferences, culture, income, education, age, and mobility. It is difficult to predict perception of quality because it varies with the background of the individual. For example, the person who has always eaten margarine may prefer its flavor to that of butter, while the individual raised on butter will probably not care for margarine.

Grades and Standards

Voluntary grading programs have been developed for many agricultural and fishery products. Most U. S. grade standards for food were originally established to provide a common language for the grade trade, assisting those separated by long distances. For example, a wholesale potato buyer on the East coast is familiar with the quality of potatoes he will get if he orders 1 or 2 grade potatoes from a Western grower.

Although most grades are primarily used by industry, some fresh market grades, such as those for dairy, fresh meats, poultry, and some fruits and vegetables are also used as consumer grades. In addition, wholesale buyers base their quality or grade requirements on the demands of retail buyers. The retail store buyers, in turn, attempt to buy what consumers like. Because grade standards exist, consumers have a better chance of obtaining uniform quality in a particular food.

Although consumers may have different criteria for selection than are used for grading, and grades are not as useful to consumers as they might be, this does not mean consumers have been ignored. Food manufacturers spend a great deal of money trying to determine what consumers like so they may design products which will be accepted. In addition, psychic quality differences have been created or appealed to through advertising. Indeed, product differentiation, whether technical or psychological, is an important food industry competitive tool.

Open Dating

A number of states have mandatory open (uncoded) dating of perishable products. Many industries are also voluntarily open dating their products. "Open Date" means a date readily understood by everyone; the consumer, retailer and manufacturer or processor. The most frequently used date is a pull date (the last date a store may sell an item as fresh).

Open dating of perishable foods contributes to better quality because dating promotes better handling and stock rotation practices and consumers can thus obtain fresher food. According to a USDA study, open dating of food products reduced by 50 percent shopper complaints about spoiled or stale food. Store losses in terms of dollars and packages requiring rehandling, also generally dropped.

Has the Market Mechanism Worked?

The real question becomes whether or not the traditional market mechanism has adequately allocated resources to serve consumer needs in the most effective and efficient manner. Tangent to this question is the role of government. Have consumers' concepts of quality been reflected in existing regulatory, voluntary and competitive efforts? If the answer is yes, the mission is simple. Namely, continue to improve present methods. On the other hand, if existing programs have not reflected consumers' desires, an alternative system must be developed. This could be a difficult task.

As consumers' income, education, mobility and activism increase, it is only logical to expect food quality considerations to become even more important. What criteria should be used to develop quality standards? How often should they be evaluated to incorporate changing value systems? What role should government, industry, and consumer groups assume in developing, implementing, and enforcing such standards?

PART IV: WHO PROTECTS OUR FOOD?

The safety, nutrition, and quality of our food supply are not left to chance. Industry voluntarily makes a contribution, as do individuals and consumer groups. Government agencies—including international, federal, state, and local agencies—are actively concerned.

Protecting our food supply is not a simple matter. Neither is it inexpensive. The more protection, the higher the cost to consumers. Federal and state agencies would be the first to admit they are often handicapped by insufficient funds and do not have the manpower to do as thorough a job as the agencies and consumers would like.

Industry and government agencies are actively involved in protecting our food.

GOVERNMENT

Cooperative International Efforts

A great deal of attention is being given to the development of international food standards. In 1961 the Council of the European Codex Alimentarious adopted a resolution proposing that the work should be taken over by FAO and WHO. This led to the creation of a jointly sponsored body known as the Codex Alimentarious Commission, which has developed an important program on food standards. Today 99 countries are members of the Commission, with some two-thirds being developing countries.

The Commission's work is motivated by two main considerations: (1) the protection of the consumer against health risks and fraud, and (2) the need for the widest possible measure of international agreement on food standards in order to facilitate international trade. One of the basic objectives of the Commission is to try to coordinate all the food standards work of international governmental and non-governmental organizations and to channel this into a meaningful and unified code.

The Commission is working on an extensive program of work covering the composition, labeling, additive, contaminant, pesticide residue, hygiene, sampling, and analytical aspects of food. There is a serious problem in developing these standards because of the difference existing between the more affluent nations who want to minimize risk, while the developing nations will accept higher risk so people will not go hungry.

Food and Drug Administration

FDA, a part of the Department of Health, Education and Welfare, is responsible for protecting food (with the exception of meat and poultry) entering interstate com-

merce. It is responsible for administering and enforcing most of the Federal laws that help in the purchase and use of food. Federal law requires that food sold across state boundaries be safe, sanitary, honestly packaged, and labeled. As new regualations are revised or developed, effort is made to keep them in agreement with the standards established by Codex Alimnentarious.

In some fields, the law is designed to supply information to help consumers make choices. In safety and cleanliness of food, the law frequently does what consumers cannot do.

Inspectors for the FDA periodically visit all food processing and storage establishments to check on sanitary conditions. When they find violations, they can negotiate and encourage improvement and/or take the matter to court. Unfit products are removed from the market; firms can be fined and individuals can be jailed.

United States Department of Agriculture

The USDA is responsible for grading and inspecting many foods. Meat and poultry inspection is mandatory. Inspection may be either state or USDA, but it must meet Federal standards. Other services relating to quality are voluntary, such as grading of canned and frozen fruits and vegetables.

Federal Trade Commission

Honest, factual food advertising assists consumers in making buying decisions. One function of the Federal Trade Commission (FTC) is to monitor and eliminate false, deceptive or misleading advertising of food. Currently under consideration is a FTC proposal to issue a trade regulation setting standards for nutritional claims in food advertising. The proposed rule would require certain nutrition information to be disclosed when various claims are made. The proposal is similar, in many respects, to the FDA nutrition labeling standards.

State and Local Agencies

State and local agencies are usually responsible for foods which do not enter interstate commerce. About three-fourths of the states have standards similar or often identical to federal standards (all states have identical meat and poultry inspection standards). However, many states also have additional regulations on foods, such as Oregon's standard maximum bacterial counts in ground meat. Violations of the bacterial standards usually reflect mishandling of the product through poor sanitation or temperatures that are too high. This objective approach to sanitation, temperature, and shelf life is designed to upgrade the quality of all fresh meat products—thus benefiting both the consumer and industry.

In many states, standards are far from identical—one state may require one thing; others another. Standards, different from the federal, can impede interstate commerce. Unless laws become more uniform, it is possible industry may petition for greater standardization of food regulations in states.

Voluntary Model Ordinance standards, recommended for state adoption, have been developed by the FDA for restaurant and food service establishments for the purpose of assuring greater uniformity of federal and state regulatory laws. Similar ordinances are being developed for supermarkets. The Council of State Governments favors improved mechanisms for greater state uniformity.

INDUSTRY

Too often it is assumed the goals of industry and consumers are in conflict. The owner of a reputable business firm desires a long-run future, so he should be as concerned with serving consumer needs as government regulators. Sometimes, short-run economic motives distract firms from pursuit of their long-run objectives. This is used as a justification for providing an unbiased third party—government—to monitor their actions. The importance of industry's contributions is often overlooked because violations or systems failures have greater impact on the minds of consumers than daily services rendered.

Industry Associations

An excellent example of industry cooperation is Project Consumer Concern—a joint venture of the United States Department of Agriculture and National Association of Retail Grocers of the U. S. (USDA-NARGUS). This project developed practical procedures and checklists to serve as sanitation guidelines for store operators. These guidelines are also used as the basis for industry sponsored educational programs. During 1974, Voluntary Industry Sanitation Guidelines for Food Distribution Centers and Warehouses was published in cooperation with the U. S. Food and Drug Administration.

Manufacturers have also been active. Through programs like Hazard Analysis and Critical Control Point for food plants, a systems approach is used to (1) identify potential problem steps in food production, (2) establish procedures for priority elimination of correctable hazards, and (3) establish control systems for unremovable hazards. Clearly such efforts have made substantial contributions to the prevention of problems in food safety.

Industry and producer based organizations have sponsored consumer education programs.

Producer based organizations such as the American Dairy Council and the National Livestock and Meat Board have been active in consumer education. Individual firms, along with trade associations serving processors, equipment manufacturers, distributors, wholesalers and retailers, have actively supported educational programs with time and money. These programs have been developed for employees, management, and consumers.

In the future, the very survival of industry associations may depend on their commitment to sound educational programs designed to help their members take advantage of existing knowledge. Their failure would likely expand the role of government and consumer advocacy groups. This may be a more costly means of achieving the same objectives and is perhaps a less agreeable alternative for many businessmen. In the case of many problems, the critical issue which must be faced is which alternative is most desirable for both industry and society—self-regulation or government regulation?

Costs and Benefits of Sanitation Management

Improved handling of perishable foods would be economically beneficial to retailers and consumers. Disregarding social costs and benefits, as well as intangible benefits to the firm such as influence on image, consumer confidence, credibility and good will, the savings in product loss and extended shelf life more than cover any additional costs of programs instituted in retail meat departments.

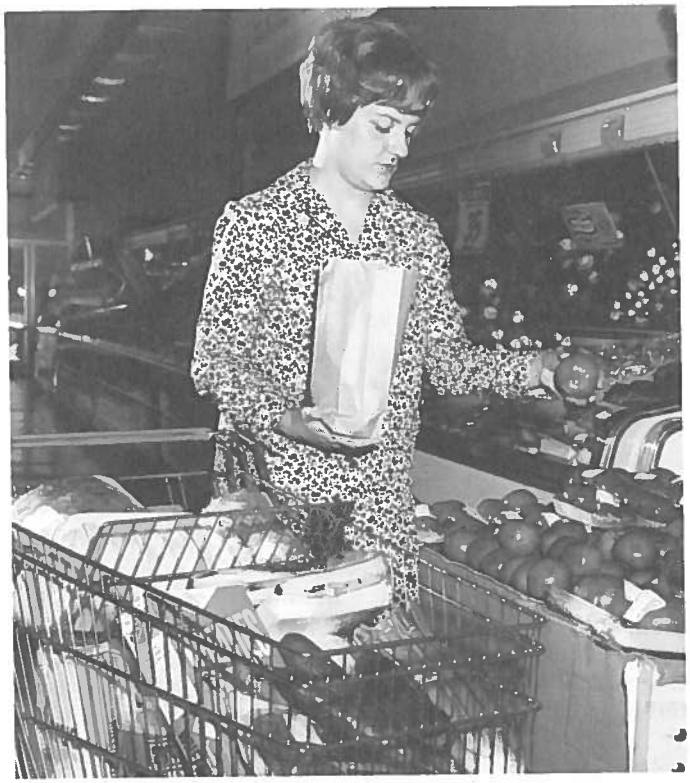
University of Missouri meats research revealed shelf life could be doubled and rewraps reduced by 50 percent. A New Mexico meats study indicated that an additional cost of $0.40 per week for improved handling of cubed steaks resulted in net weekly savings of $9.64 for a typical meat department. New Jersey researchers demonstrated net savings of $169 per week in the meat department of a typical supermarket.

While similar research is not available for other perishable departments, there is strong evidence that greater care in product handling, personal cleanliness, and temperature control may yield positive economic benefits.

Many retail food stores are incorporating a sanitation management program into their operations. Their reasons include the maintenance of images, economics, regulatory mandates, competitive pressures, and consumer influence. However, recent studies reveal that more stores need to adopt a sanitation management program and there is a continuous need for education of management and employees to assure maintenance of the programs' effectiveness.

CONSUMERS

Consumers are having an impact on the quality of their food supply. Activities of national, state, and local consumer organizations have facilitated many changes in the food industry. Examples on the national level are the FTC regulation on food advertising directed to children; nutrient labeling; and voluntary ingredient labeling, now done for many standardized products. State legislators respond to consumer issues.



Consumer spending patterns affect the quality and kind of products in the market.

The individual consumer's buying has little impact on the food industry. Collectively, however, consumer spending patterns influence the quality and kind of products in the market. Even though large firms extensively develop, test market and advertise new products, only about one out of every four new products brought to market actually survives.

Legitimate consumer complaints, effectively made, can do a great deal to eliminate such things as mislabeling, short weight, poor handling or inferior quality. In a recent USDA study, 70 percent of the respondents indicated that, despite contentment with food products and marketing services in general, they were dissatisfied with certain foods or food stores during the past year. However, of those who found fault with a specific food item, only 7 percent actually complained to the manufacturer—and only 3 percent complained to public officials or consumer protection agencies. Consumers did protest to food-store managers, but most of the dissatisfied customers simply complained to friends and relatives.

The appropriate route for a legitimate complaint usually starts with the store manager. It may go on to the processor or manufacturer, a local or state health, trade or agricultural agency, or the FDA or FTC. To aid the consumer, FDA has consumer specialists in each district office and many states have a similar office.

Food loss is a world-wide problem at all levels from the farm to the consumer. One estimate is that in some developing countries nearly one-third of the harvested crop is lost before reaching animals or man.

In the U.S., foods may be discarded in the kitchen either because they are unsafe to eat, no longer fresh, or because of confusion as to when food should be thrown away. A recent Arizona study of household garbage re-

vealed at least 9 percent of the total food purchased for consumption at home was wasted. The investigators estimated that the yearly cost of wasted foods in an average household was $80 to $100, exclusive of beverage losses and food discarded through garbage disposers.

The consumer has a key role in serving food that is safe, nutritious, and good. The last defense is in the kitchen. Safety is an especially important factor at that point. Following are two basic rules to prevent much illness:

1. *Keep cold foods cold* (40°F. or below) *and hot foods hot* (140° F. or above).
2. *Avoid cross-contamination of raw meats, poultry, and seafoods with foods that are ready to eat.*

PART V: POLICY—CHOICES AND ALTERNATIVES

Policy decisions affecting the quality of our foods are complex. Perhaps the central issue is "What kind of a social-economic-political system is desirable?" What are the most desirable levels of control and balance between industry, government, and consumers?

EDUCATION-REGULATION BALANCE

Among the choices to be considered by each of us are cost-benefits and effectiveness of educational programs versus regulatory programs.

For instance, can the consumer make informed choices of a variety of foods that will lead to optimal nutrition for the family? The importance of eating a variety of foods has been stressed as the way to achieve good nutrition. If, instead, fabricated foods are promoted, will the consumer tend to eat greater quantities of fewer foods? If so, what deficiencies of trace minerals or other nutrients of which we have inadequate knowledge, or excessive intake of natural toxicants or food additives may result?

Which educational techniques are most effective? Are we utilizing all of the media? Can we afford to? Do we need to?

Do consumers have a choice in the market? Should they have greater choice? Are they part of the decision making? Or, should consumers be protected from making a poor choice by restriction of products available? What are the costs and benefits to various segments of society of greater choice or more restriction? Stated another way, what are the trade-offs between greater personal freedom and more controls?

RISK-BENEFIT RATIO

The risk-benefit ratio may be used in the delicate balancing of risks against advantages of practices in food production and handling. This is often involved in public policy decisions regulating the safety of the U. S. food supply.

Many food safety issues might be discussed from the standpoint of their risk-benefit ratio. A few selected ones are as follows:

Delaney Clause

The Delaney Clause is a portion of the Food Additives Amendment of 1958 which says, in effect, no material may be added to a food if it has been shown to cause cancer in man or animal. It is a simple, straight-forward statement and certainly no one can argue with the concept on which this amendment is based. However, it is likely to cause increasing dilemmas. This is because analytical methodology allows us to measure minute quantities of materials that were previously undetectable. With the advancing analytical capability, more and more foods are going to be found to contain traces of materials that could, in some conditions, be carcinogenic, i.e. cancer causing. When this occurs, FDA will be forced to ban additives, even though there is no indication that levels present have any effect on man.

Just discussing something as emotional as the Delaney Clause and all its implications is difficult. Answering the questions it raises is unbelievably difficult. Some people feel if there is even a remote possibility of a substance causing cancer, it should be banned. Other disagree, saying that *any food* in excessive amounts could produce harmful effects.

In many ways the Delaney Clause looks untenable. At the same time, we do not know all the basic causes of cancer and anyone arguing against the Delaney Clause is likely to be in an even more untenable position.

Nitrites

Nitrites are a food additive much in the news today. Nitrite performs several functions in the curing of meat. It affects color and flavor and most importantly, it has an inhibitory effect on the formation of botulinum toxin. However, it has been found that nitrites can combine with secondary amines present in many foods to form a new class of compounds called nitrosamines, many of which are toxic. Therein lies the dilemma. Should we ban the use of nitrites and nitrates because of the carcinogenic proper-

Continuing research tests the safety of food additives.

ies of the nitrosamines that may form? Does the known protection that nitrites provide against botulism sufficiently overshadow any risk of cancer?

Current research indicates sodium ascorbate—sodium salt of vitamin C—or its close relative, sodium erthorbaye, may control the formation of nitrosamines. These vitamin C compounds, along with reduced amounts of sodium nitrite, may guard against possible danger of nitrosamines in cured meats. So, research may provide alternative solutions.

Pesticides

The benefits of pesticides may be estimated in terms related to food production and the dollar value of products. The financial effects of banning or restricting pesticides in this country could be gauged by a report from the Agriculture Committee in the Great Lakes States which stated:

> Stopping the use of pesticides in the Great Lakes States would reduce the value of agricultural production by over $1 ½ billion annually. Of this, loss from eliminating insecticides would account for over $650 million, from eliminating herbicides for weed control over $635 million, and fungicides for plant disease control over $230 million. The impact on the total economy would be manyfold larger.

According to a USDA estimate, apples grown without pesticides could cost as much as $5 per pound.

Risks to the population or to individuals are more difficult to estimate. Since experimental knowledge is based on animal, rather than human experimentation, there is always a limit in scientific data. Risks are dosage-related. It must be assumed that a degree of incorrect use of an approved pesticide will occur. What is the risk then? Can one weigh potential injury to a small number of people against benefit to large numbers? Thus one realizes that ethics are involved.

Who should weigh the risks, the benefits, then make the decision on the use of a particular pesticide? Which team can best decide?

NUTRITION POLICY

Does the U.S. need a National Nutrition Policy? The Senate Select Committee on Nutrition has been studying guidelines for a National Nutrition Policy submitted by the National Nutrition Consortium. The consortium committee decided "a stated national nutrition policy is needed to ensure that food will be available to provide an adequate diet at a reasonable cost to every person within the United States." The five goals for such a policy were identified as:

1. Assure an adequate, wholesome and acceptable food supply at reasonable cost to all,
2. Maintain food resources to meet national and international responsibilities,
3. Develop a sound understanding of nutrition,
4. Maintain safety and quality standards, and
5. Support research to solve important current problems and basic research.

Apples grown without pesticides would cost nearly $5 per pound.

To implement policy, the establishment of an Office of Nutrition or a National Nutrition Center is recommended by the National Nutrition Consortium as well as support for food and human nutrition research, education at all levels and nutritional diagnosis. International aspects should be coordinated with the Agency for International Development, international programs of other branches of the government, and such international agencies as FAO and WHO.

Such a National Nutrition Policy could serve as a basis for decision-making. If so, how closely should agricultural and nutritional policies be coordinated? Some would say the market directed control which now exists can exert the checks and balances needed. Which mechanism would better determine the crops which should be grown, the allocation of fuel and fertilizer, the use of wheat for food, for feed or for whiskey?

FUNDS FOR RESEARCH VERSUS IMPLEMENTATION

Research emphasis and the demands for research change with social concerns. The present era is one of seeking applied research and technological emphasis on utilization of research findings. Research designed to achieve an understanding of the nature of materials may have no immediately visualized application. Is support of this type of research affordable? Can we afford not to support it? For example, the amino acid sequence of only one of the staphylococcal enterotoxins (the chief cause of food poisoning) is known. Determination of sequences in the others (at least four more) will be costly. But might it reveal a way to quickly identify any type of staphylococcal enterotoxin in a food so that a decision on discarding a large quantity of food could be made?

Given limited resources, what combination of application and research is optimal?

CONCLUSION

Food that is safe, appetizing, nutritious, and accessible contributes greatly to the physical and emotional well being of a nation. Responsibility for the safety and quality of our food supply is a cooperative effort involving the producer, processor, retailer, governmental agencies, and individual consumers.

The current trend toward the use of more food processed by industry and less preparation in the home means industry cooperation and government regulations may be necessary to help insure *food safety*.

To augment our food supply, pesticides, herbicides, and other additives are used to increase crop yeilds, Various preservatives are added during processing to prevent spoilage and increase shelf life of food. Although pesticides and food additives offer advantages in production and preservation of food, they also need careful monitoring for safety.

Nutrition ranks low in consumers' reasons for selecting food. Hopes are that knowledge and interest in nutrition will increase as more information becomes available through labeling and educational programs.

Quality (food that looks and tastes good) is one of the most important factors consumers use in selecting and buying food. Much of the regulatory activity of government is directed at identifying and safeguarding quality aspects of foods. Industry, too, is very interested in maintaining quality that will satisfy consumers. This emphasis on quality assists in maintaining food safety and nutritional value as quality deterioration is often accompanied by safety and nutrition losses.

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This chapter discusses the source of power and control held by various sectors of the food system. It identifies some of the emerging issues growing out of structural changes in the food system. The authors point out that control depends largely on the sector's access to and use of resources and the determination of quality, type, price, and market outlets for the products produced.

Firms providing farm inputs such as fertilizer, farm machinery, feed, and credit contribute about 25 percent of the value of U.S. food. Farmers contribute their services and add further value. Food marketing firms add the remaining 60 percent.

Each of these sectors, along with consumers, can exert some control and influence over the food system. However, control shifts as supply conditions change.

5. WHO WILL CONTROL IT?

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For many years, the U. S. food system could be described as many independent farmers producing products which were processed and distributed by marketing firms to consumers who influenced production by their purchase decisions. This image has become increasingly tarnished in recent years. Both farmers and consumers feel they have lost much of their power to manage their own destiny and to exert some control over the food system. Today's food system is sometimes compared to an hourglass, with the middleman enjoying most of the control.

The U. S. food system can be thought of as a complex value adding system—similar in some respects to an assembly line. At each step, resources and value are added to the product from the previous step. Firms providing farm inputs such as fertilizer, farm machinery, feed, and credit contribute about 25 percent of the value to U.S. food, farmers contribute about 15 percent, and food marketing firms add the remaining 60 percent. Viewed in this way, farmers are also "middlemen."

Control in the food system depends largely on *control over key decisions*. Control over various decisions may reside with consumers, firms that make up the food system, or the state which possesses authority to regulate and oversee certain aspects of the food system.

Control over the following decisions are particularly important:

1. Access to and use of resources: Capital, labor, raw materials, information, and management are resources used at each value adding step. Access means either ownership or special arrangements influencing decision control.

2. Determination of the quantity, type, price and market outlets for products produced. Control over these decisions depends to some extent on ownership rights but may be influenced by the rules of the game set forth by the state (e.g., price controls), and the level of competition and "market power."[1] Where there is keen competition, control over these decisions tends to fall to the market. Factors that determine the degree of market power are the concentration of buyers and sellers, degree of product differentiation, and conditions of entry or exit from the market. Firms with considerable market power generally have a high degree of control over decisions.

Decision control may change. Not only are rights and authority shifted, but market power positions may change as supply conditions change. When food is plentiful, power in the food system tends to shift toward the consumer. During times of shortages, power shifts back toward the production and farm supply levels. Since World War II, food retailers and food manufacturers have enjoyed increasing levels of market power.

Appreciation for counsel is extended to Ruth Deacon, Iowa State University; Robert L. Rizek, Chairman of the Consumer and Food Economics Institute, U.S.D.A., Edgar P. Watkins, The Ohio State University and two anonymous industry people.

[1]Market Power—refers to an organization's ability to influence price and terms of trade in either buying inputs or selling its output. Where little power exists, prices and other terms of trade tend to be determined at a competitive level. Where substantial power exists, certain firms can influence the terms of trade in their favor.

THE FOOD DISTRIBUTION SYSTEM

Food distribution remained a small business operation up to the 1920's. The small family-owned food retail establishment was served by a family-owned food wholesale operation. This atomistic set of industries tended to be slow in adopting new technology and costs were high in terms of efficiency measures concerning handling of goods.

Mechanized handling techniques applied by food manufacturers and importers during the early part of this century lead to rapid productivity increases in manufacturing and wholesaling operations. Food retailing operations, connected to activities of food manufacturers and importers, began to benefit from this new technology while family owned operations did not.

Food Chains, Supermarkets

The Kroger Grocery and Baking Company and The Great Atlantic and Pacific Tea Company are examples of integrated operations which brought technology into food distribution. Both occupy positions among the largest food distributors today, though many others are prominent.

Food chains grew rapidly between 1920 and 1930 (Figure 1).

By 1933, nearly one-third of the nation's food business was conducted by these early food chains.[2] This growth of "big business" in a traditionally family business area was a frightening transition. Most states passed legislation discriminating against chain operations during the 1930's. Although new food chains had retail facilities very much like the family businesses, the major difference was the streamlined pre-retailing activities, which were made much more efficient.

The food chains were also able to exercise considerable power in the supply markets. As a result of this new buying power, the Robinson-Patman Act was legislated nationally.[3]

No sooner had the food chain movement occurred when another revolution hit the food distribution industries. The supermarket, which combined self service and cash-and-carry merchandising with the centralizing of food departments, was developed in the early 1930's. The advent of the automobile and mechanical refrigeration both at home and in industry made the use of supermarkets feasible to many families and strongly influenced the rapid industry growth. The supermarket[4] movement seems well adapted to the suburban pattern of community development so common following World War II.

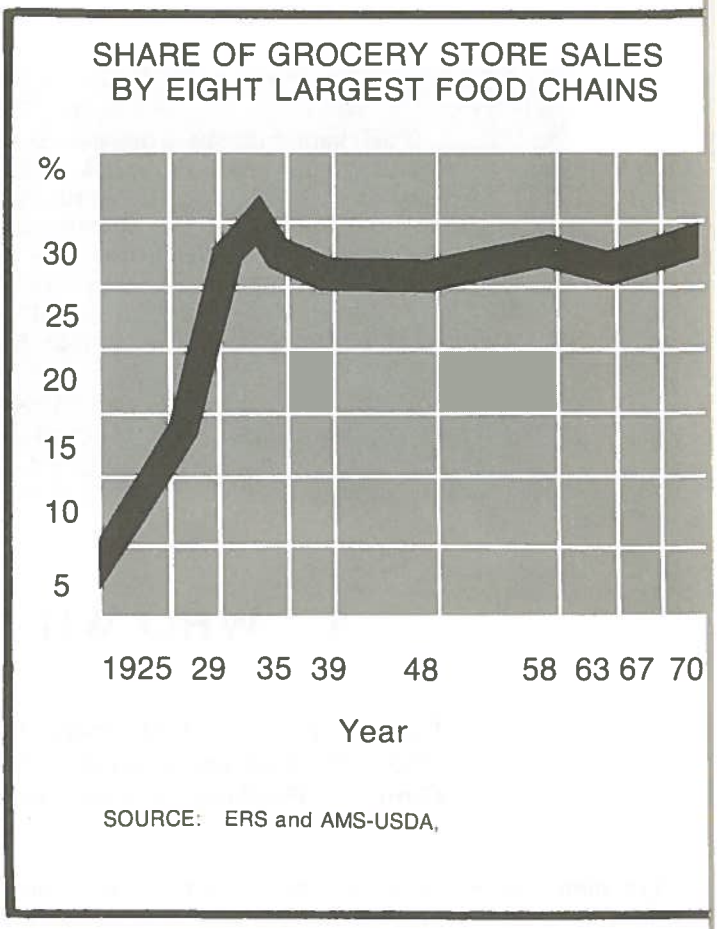


Figure 1

These stores generated huge volumes and substantially reduced retailing costs. Comparisons of supermarket margins with those of the "grocery stores" of the 1920's show margins of about 20% dropped to almost 15% by the early 1950's. The supermarket advantage is reflected by the fact they included high cost items such as produce and meat where the grocery stores did not. In addition, the supermarket displays a much wider variety of products which makes direct comparisons difficult.

While the supermarket was developed by independent food retailers, it's huge success made it imperative for food chains to follow. About 25 percent of the food was distributed through supermarkets in 1948, and by 1958 the percentage had increased to nearly 70 percent and then leveled off. It was 71.8 percent in 1974.

The influence of the supermarket as a new approach to food retailing has been quite different than the influence of the food chain. The mass selling of several thousand items at retail has provided a food distribution unit compatible with the incentive of the manufacturer to experiment with new products. It has also made a condition in which it is very difficult for consumers to understand the general price level of competing stores and to interpret information about special prices for a few products. Although the supermarket has been an effective distribution agent for the suburban shopper, it tends to engage in cost increasing competition without giving shoppers adequate information.

[2]Food Chain—The U. S. Department of Commerce defines a chain as an operator of four or more food stores. The firm also may conduct distribution center operations.

[3]Robinson-Patman Act—an amendment in 1936 to the Clayton Act that declares illegal the charging of different prices to different buyers unless the price differences are "justified" by cost differences or meeting the price of competition.

[4]Supermarket—Originally referred to a new method of retailing involving self-service, cash and carry, a wide selection of merchandise and high volume at low prices. The term now refers to a store owned by either a chain or independent operator, with annual sales of $1,000,000 or more.

In the past two decades, nonprice competition between supermarkets has become increasingly important. Trading stamps, games, decor, site locations, the addition of new product lines, special promotions, advertising, and longer store hours have tended to increase sales and operating costs. The supermarket is designed for the mass market and is not well adapted to either high density, low income, immobile consumers in urban areas or to low density rural areas.

From a national viewpoint, the food retailing industry is not heavily concentrated—the top four firms have about 20 percent of the retail grocery business. In local markets there may be considerable concentration—four chains usually account for 50 percent or more of sales. Entry into food retailing has become more difficult as investment requirements increase, but independent operators can compete effectively by joining a cooperative or voluntary chain which is a group of retailers each of whom owns and operates his own store but is associated voluntarily with a cooperative or independent wholesale organization for cooperative buying, advertising and/or other functions. About one-half of the supermarkets are independents.

Chains generally have not vertically integrated[5] processing of agricultural production into food manufacturing, except in a few lines of products. The most notable exceptions are fluid milk and bakery products. Because retailers control shelf space, they have considerable power in dealing with manufacturers, except in times of shortages.

Issues in the wholesale-retail food store sector.

Pricing and price signals: Food retailers use prices as a merchandising tool. Consequently price movements of some products may not be related to supply and demand factors. This tends to distort the signals to manufacturers and producers, create logistics problems as supplies may not be adequate at various levels in the system, and becomes cost increasing.

Nonprice competition: Trading stamps, games, increased customer services, and other forms of nonprice competition is cost increasing in the long run.

Failure to serve entire market: Supermarkets are not designed for and have not served well the low-income urban or sparsely populated rural areas.

Market power: The control of shelf space places the food chains in a strong bargaining position relative to regional processors and manufacturers.

Concentration: Has increased gradually over time. It could represent a potential problem in more heavily concentrated local markets.

Regulatory requirements: Government regulations have considerable impact on industry performance and increase the cost of food distribution in some situations.

[5]*Vertical integration* — control, under one management, of a number of production units engaged in successive processes of production and marketing.

The Away-From-Home Eating Sector

Away-from-home eating was the last province of the food industry occupied by the small businessman. However, this situation has undergone rapid change since the mid-1960's when several new mass merchandisers entered the business.

Today, nearly one meal in four is consumed away from home. Americans spent 30 percent of their total food expenditures in 1972 for food service as compared to 25 percent in 1963. About three-fourths of the food service expenditures and two-thirds of the food consumed are in public eating places such as restaurants, cafeterias, snack bars and other eating places. Institutions such as hospitals, schools, colleges, inplant cafeterias, nursing homes, and government service account for one fourth of sales and one third of the meals.

There are three broad groups of institutions in the away-from-home food service industry. They are 1) public eating places and institutions serving food to consumers, 2) institutional wholesalers, and 3) food manufacturers and processors that prepare products especially for this market. Distinction between the groups is breaking down as chain foodservice operations develop their own wholesale distribution systems and food manufacturers and processors enter the chain restaurant and institutional foodservice industry, e.g., the Burger Chef system owned by General Foods.

The foodservice industry is composed of more than 300,000 foodservice establishments. There has been less growth in the size of establishment than in any other segment of the food industry. This is because there are few economies of scale in individual retail units and the size of market for any one establishment is relatively small. There are considerable economies, however, in large distribution systems supplying public eating places and institutions. Consequently, chain firms have achieved volume by increasing the number of units rather than the size of unit. For example, Kentucky Fried Chicken had sales of $1,350 million in 1974 through 5,000 units.

The away-from-home food service industry includes public eating places and institutions serving food to customers.

During the past 15 years, mass merchandising firms entered the industry and expanded first through franchising and then through internal growth and merger. Franchise agreements initially provided the chain groups considerable control with a minimum investment and allowed rapid growth. In the commercial restaurant industry, there are more than 2,500 chains with over 40,000 units. The fast food franchise group had about 11 percent of the "eating and drinking" establishment sales in 1964, but their share had grown to 28 percent in 1974. In 1974, 11 firms accounted for 61 percent of total sales by franchise or chain groups.

Concentration in the institutional feeding sector has been increasing as well. Competition is based largely on reputation and entry is becoming more difficult. A few of the largest institutional foodservice firms have established their own wholesale distribution systems.

Although food manufacturing firms are not a large factor in grocery retailing, they have become a significant factor in the foodservice industry in the past decade. Forty-one large processing and agribusiness corporations owned or controlled about 12 percent of the commercial foodservice market in the U.S. in 1973.[6]

Price competition was a key factor in the establishment and growth of chain foodservice organizations. Competitive advantage was gained through a variety of cost reducing innovations in food preparation, more efficient distribution systems, labor saving store layouts, more efficient ordering and purchasing programs, and product specialization. Moreover, franchise or chain groups provided management training, quality control programs, and superior business site location services as compared to independent firms.

[6]Examples include General Foods (Burger Chef), General Mills (Red Lobster), Pillsbury (Burger King), Bordens (Homer Filby), Campbell's (Herty's Clarks, Pietro's etc.), United Brands (AGW), Hurbleien (Kentucky Fried Chicken), ITT (Sheraton), Ralston-Purina (Foodmaker), Green Giant (Henrici's) Beechnut (Dobbs), J. Lyons, Ltd. (Tastee Freeze and Baskin and Robbins), Del Monte (Service Systems), Amfac (Fred Harvey).

The away-from-home eating sector has performed well in terms of product quality, service, and competition.

As the industry has become more mature, prices are comparable in many markets and nonprice competition is becoming more important. Advertising is increasing. The largest chain fast-food firms allocate four percent of sales for advertising, double the standard used 10 years ago. Television advertisement emphasizing awareness is the primary method.

Large firms have formed research departments to develop more scientific site selection methods and to further improve and differentiate products and services through facility design, decor, and specialized menus.

The away-from-home eating industry has performed reasonably well in terms of product quality, service, and competition. Consumers have benefited through reduced prices but concentration in local markets has increased and entry into the institutional foodservice sector has become more difficult. Franchising, large scale supply purchases, massive promotion and advertising programs, and standardized products and services have been important for the control and growth of food service chains.

There has been a small amount of backward integration into agricultural production by foodservice chains. As the power of the larger foodservice firms increase relative to institutional food suppliers the incentives for integration decline.

Issues in the away-from-home eating sector.

Franchising: Franchisers can achieve a large amount of control through contractual arrangements with franchisees and suppliers.

Entry: It is difficult for new firms to secure foodservice contracts with institutions since past foodservice performance is an imporant criteria.

CONTROL IN THE FOOD MANUFACTURING SECTOR

The first two decades of the 20th century saw many applications of processing machinery in the food manufacturing sect. Operations previously done by hand were adapted to machine operation. This developmental stage led to the emergence of large regional processors in many food lines and continued through World War II. The number of processing plants decreased substantially as mechanized operations emerged. The growth of the food processing industries was rapid inpart because many operations previously performed in the household were taken over by these new emerging industries. The canning industry grew remarkably.

Following World War II, a very different influence came to dominate the industry and had a profound effect on its structural evolution. Consumer real income (purchasing power) rose rapidly. Demand for convenience foods offered new horizons for food manufacturers. This gave rise to new product experimentation and introduction. Experimentation required laboratories as well as large scale promotional activities.

This influence encouraged conglomerate[7] structures to merge. Many regional processors found advantage in merging not only with processors of the same product in another region but with entirely different product lines. The services of central laboratories and central promotional facilities could be spread across different processing activities. Moreover, significant economies were obtained through the merger of regional distribution systems into a national system. Regional processors who did not merge with the postwar food conglomerates found difficulty in selling their products in competition with national firms. Thus, their output became available for private label programs of food chains which had emerged in the distribution sector.

It is difficult both to measure and interpret industrial concentration in food manufacturing. The important food manufacturers are often a part of large industrial firms dealing in many industries aside from food. The relative ease with which these firms can change from one industry to another causes instability in the level of concentration in any particular industry. In addition, because these firms are involved in several industries, they have the ability to subsidize one industry with the earnings from another. The presence of this type conglomerate power reduces the meaning of concentration in individual industries.

[7]Conglomerate—A Firm which owns, usually through acquisition, a number of businesses that are unrelated, e.g., a tobacco manufacturer acquires a frozen food processing firm.

Although some important industries have become less concentrated, the overall trend is toward increased concentration, particularly in industries where brands are important. (Figure 2) Since the relevant market for many industries is local or regional the figures understate the level of concentration. For example, while the largest four firms processed 20 percent of the U.S. fluid mild, a recent study of 144 local and regional fluid milk markets revealed that on the average, the largest four firms processed 47 percent of the fluid milk.

Profit margins data are not easily related to food manufacturing activity within conglomerate firms because published data do not separate the food activities of these firms from other activities. The large conglomerate food manufacturers heavily involved in new product experimentation and promotion have been rather profitable during the 1960's and the beginning of the 1970's (Table 1). Consumer income rose rapidly and new products and convenience products had strong consumer appeal. The profitability of these marketing activities will decline with the slowing of increases in consumer real income and the rapid increase of food prices which began in 1973. Except for some specialty areas (soft drinks) food industry profits show levels near other manufacturing industries.

In addition to the question of excessive profits, the activities of these large firms present several other questions of public concern. The process of product differentiation and experimentation is expensive and hazardous. Product safety is a complex question. The emergence of

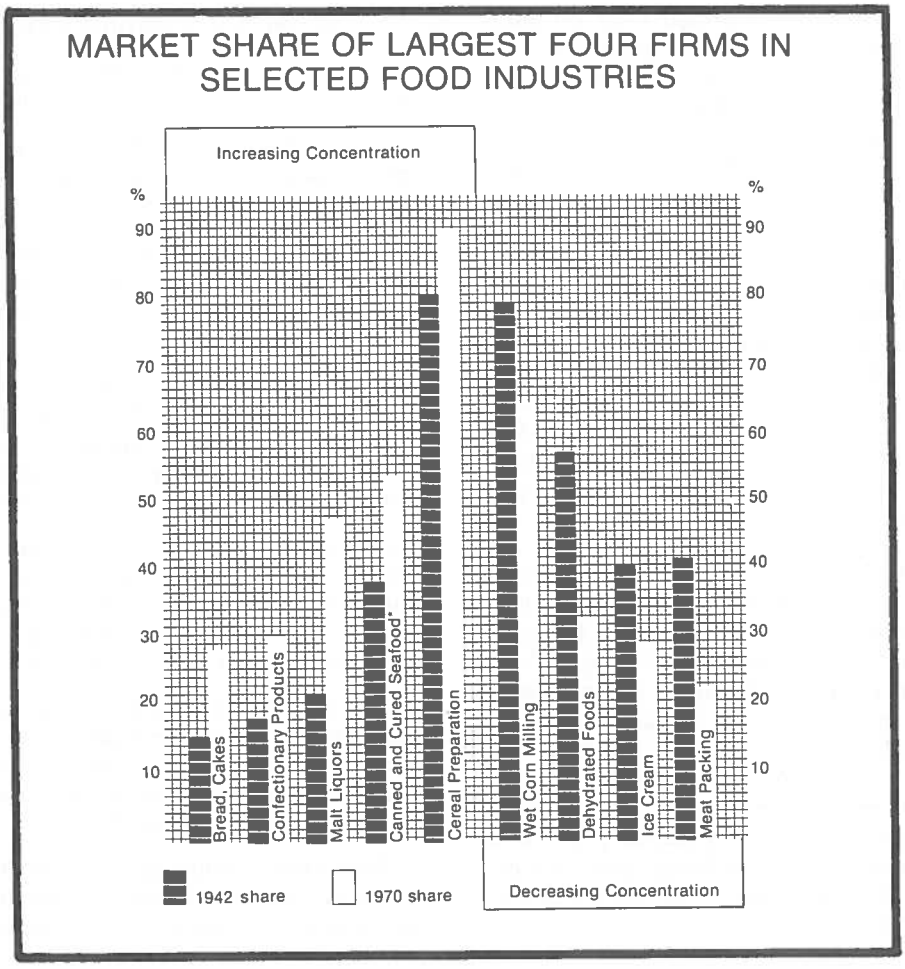


Figure 2

TABLE 1

Profits after taxes of leading retail food chains and food manufacturing industries, 1963-73

Period	Food chains[1]	manufacturing industries[2] Baking	Dairy products	Meat packing	Other food products	Soft drinks	All food manufacturing[3]	All manufacturing[3]
				percent return on stockholder equity				
1963	11.4	11.0	11.2	6.1	12.1	17.9	9.0	10.3
1964	11.5	11.3	12.2	8.6	11.8	20.1	10.1	11.7
1965	11.3	11.9	12.5	5.3	12.6	21.1	10.7	13.1
1966	11.4	13.9	12.6	5.2	13.3	22.0	11.3	13.6
1967	10.3	15.7	11.8	9.2	12.3	23.2	10.9	11.8
1968	10.3	13.4	11.7	8.3	12.7	22.7	10.8	12.2
1969	10.4	7.9	11.8	9.4	12.1	22.5	10.9	11.5
1970	10.6	11.0	12.0	6.6	12.8	22.7	10.8	9.3
1971	10.1	12.8	12.6	7.76	12.3	23.1	11.0	9.7
1972	5.1	11.2	12.8	9.2	14.2	22.1	11.2	10.6
1973	7.6	8.5	13.1	14.6	22.1	12.8	122.6	12.6
%								

[1] Compiled by ERS from financial reports of 15 leading firms published in "Moody's Industrial Manual."
[2] Tabulated by the First National City Bank, New York and published in the April issue of its "Monthly Economic Letter." These figures may differ somewhat from industry averages because the compilation is more likely to include the largest and most profitable firms than small firms and corporations with no net income.
[3] Compiled from "Quarterly Financial Report for Manufacturing Corporations" published by the Federal Trade Commission.

Source: Marketing and Transportation Situation, ERS-USDA, November 1974.

pre-processed and convenience oriented food products offers many opportunities for ingredient substitution and additives. These also create more hazards from toxic materials than when food was distributed in the form of staples. The very experimentative nature of industrial competition vastly increases the public burden of monitoring product safety.

These large food manufacturers are among the nation's most aggressive advertisers. There is little public guidance in this flow of information from food manufacturers to consumers. In addition to being expensive, it is possible that the food industry establishes habits among consumers through product images that may be detrimental to public health and well being. For example, many people question whether it is in public interest to advertise sweetness as an important characteristic of cereal products developed primarily for children.

Food manufacturers have gained some control over other stages of food production and distribution ownership and contractual arrangements. For example, the large bulk of processed fruits and vegetables and a major share of the poultry products are produced under contract with food manufacturing companies. Both vertical integration plus promotion and advertising programs are important coordinating devices in the food system. However, they also provide important sources of power and control to large food manufacturers. Vertical integration provides a degree of control over industries supplying them. Advertising and promotion have increased their market power with retailers and consumers.

Issues in the food manufacturing sector.

Concentration: Concentration in differentiated products represents a potential problem.

Pricing: Accurate porduct pricing at various stages of production represents a potential problem as more vertical integration occurs.

Entry: Entry into large scale manufacturing of differentiated products is difficult because of large capital requirements for product experimentation and promotion.

Control over other stages of production, processing, and marketing: A major issue in broilers, turkeys, processed fruits and vegetables and various specialty crops. It may become more important in other agricultural commodities and food products.

Advertising and promotion: The food manufacturing sector spends more on advertising and promotion than does any other sector. This is cost increasing and influences the values and habits of consumers and may sometimes allow inferior products to be marketed.

The conglomerate business organization: Some question the effects of conglomerates on competition. The lack of information about the performance of individual business operations within the conglomerate complex makes evaluation difficult.

Information: Food manufacturers have advantages due to more and better information for making business decisions as compared to raw material suppliers.

CONTROL AT THE FIRST HANDLER LEVEL

The two most likely points of power at the first handler :vel are marketing cooperatives and large vertically in-:grated food processors. For the most part, farmer mar-eting cooperatives have confined their activities to the irst handling of member's products. They are not im-ortant in food manufacturing except for selected pro-ucts such as butter, dried milk, and canned grape pro-ucts. The estimated proportion of farm products mar-eted through cooperatives in 1970 is illustrated in 'igure 3.

Cooperative market power tends to be associated with ɔmmodities where Federal or state marketing orders[8] are ı effect (dairy, cranberries, walnuts, raisins, prunes, alifornia-Arizona oranges, and lemons). However ɔoperatives and market orders have provided more or-derly marketing and more efficient management of surplus for several commodities.

Because of the importance of dairy products and the relatively few substitutes for them, the influence of giant dairy cooperatives and Federal milk marketing orders has attracted public attention. Although recent evidence suggests the price of milk has not been unjustly increased, the economic and political power of the giant dairy cooperatives provide little assurance this might not happen in the future.

Farmer marketing cooperatives represent forward integration by farmers to control and perform the initial stages of the marketing of their products. Backward integration by food processors and distributors into product assembly or agricultural production has also increased in recent years. As a result, the assembly step in food marketing has become relatively concentrated at the local level. For example, within the 12 North Central States where two-thirds of the nation's hogs are slaughtered, the four largest hog buyers in a state purchase 70 percent of the hogs on the average. The situation is similar for fed cattle. The result is limited local competition among buyers of farm products. Cooperatives can, and in some cases are, providing alternative outlets for the output of their members, particularly where they are of sufficient size and efficiency to compete with non-cooperative firms.

[8] *Marketing Orders:* An instrument authorized by Congress in 1937 to coordinate ;ricultural marketing activities at the producer and first handler levels in order to hieve "orderly marketing." Marketing orders contribute to more orderly market-g by regulating the quantity and quality of commodies being marketed. Milk arketing orders also establish minimum farm price for fluid milk. Marketing ders are important in milk, fruit, vegetables, nuts, and some specialty crops. arketing orders are usually issued by the Secretary of Agriculture only if they are vored by two-thirds of the producers that would be affected. A committee of oducers and handlers administer the order at the local level.

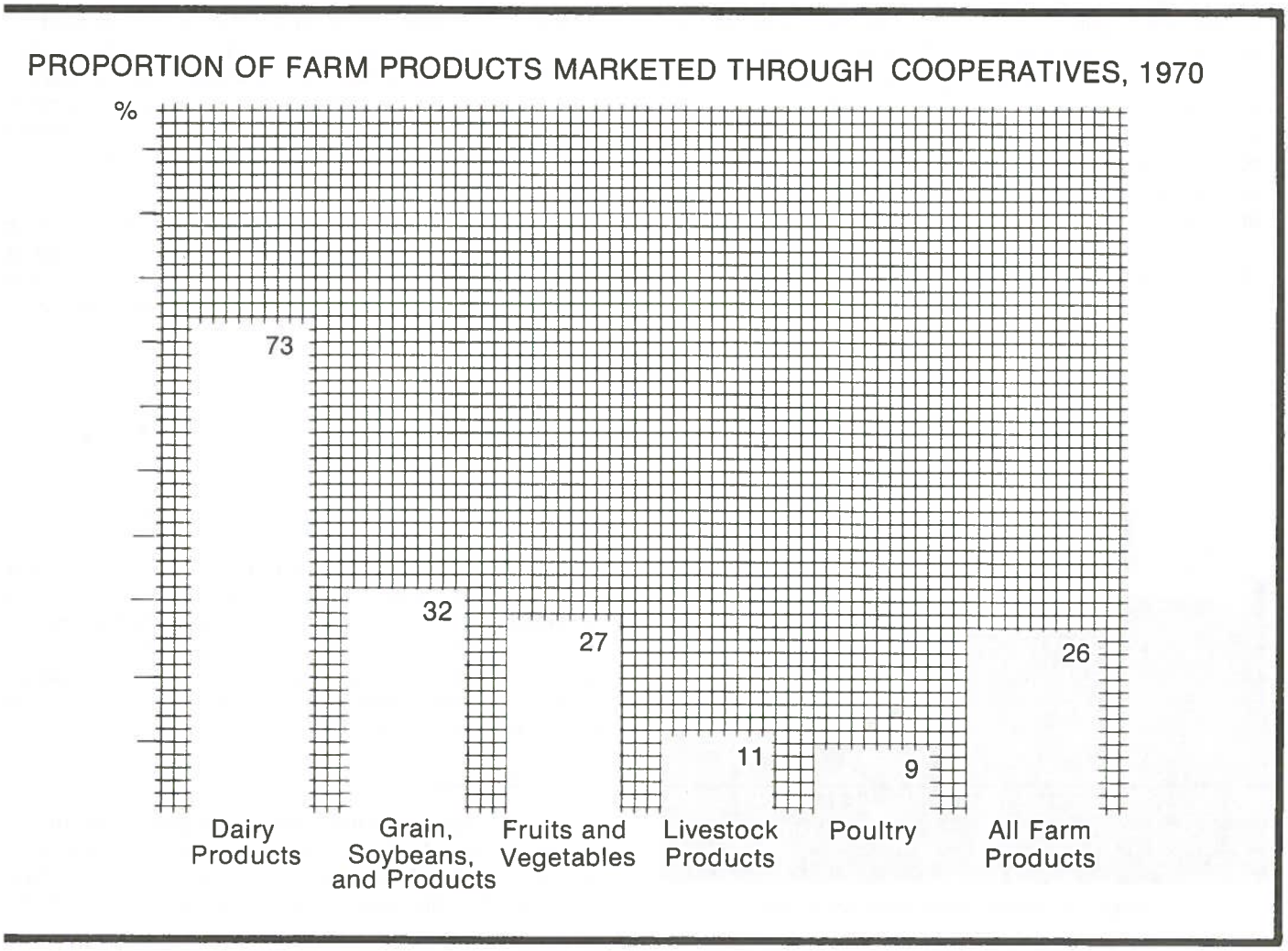


Figure 3

Issues at the first handler level.

Concentration: Local markets usually are very concentrated with only one or two buyers in some cases. Buyers are frequently in a superior bargaining position.

Pricing: Many markets are "thin," i.e., prices are based on spot or cash markets but only a small share of the production is sold in cash markets. The price discover mechanism may be "muddled."

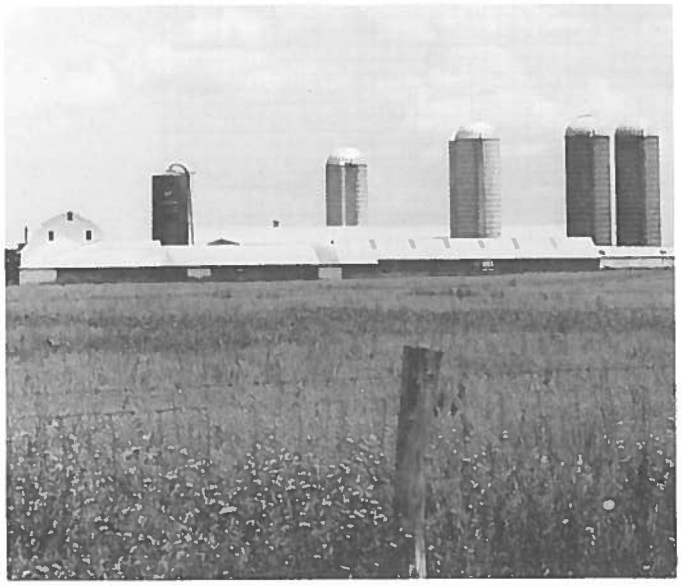
Market information: Buyers usually have superior market information as compared to producer-sellers.

AGRICULTURAL PRODUCTION

Farms are steadily getting fewer and larger. In 1972, there were an estimated 2.9 million farms in the United States compared to 3.7 million in 1962. As in most industries, a small proportion of these farms produce a large share of the total farm output. For example, less than three percent of all farms had sales of $100,000 or more in 1972, yet these farms marketed 40 percent of all farm products. At the opposite extreme, 63 percent of the farms represented only nine percent of all sales.

Because of the large number of farms involved in producing nearly every farm product, there is little power in agricultural production because of the tendency for farming to be very dispersed. There are two possible exceptions—collective action by farmers and the giant industrialized farms operated by nonfarm firms.

Collective action by farmers may occur by organizing bargaining associations to negotiate with first handlers or by organizing marketing cooperatives to perform some of the marketing functions. Because bargaining associations, to date, have not had the power to control production, their ability to raise prices has been limited. Marketing cooperatives have become relatively important in some commodities.



Farms are steadily getting fewer and larger.

The term "corporate farming" has been widely used—often to refer to the invasion of farming by large nonfarm firms. However, the vast majority of incorporated farms are essentially family farms which have little power in the food system.

Giant industrialized farms, such as those operated by Tenneco, Purex, United Brands or Stratford of Texas, are quite another matter. The power of these firms stems largely from their enormous financial resources and their ability to organize an integrated, tightly controlled marketing system through which to sell their farm output. Estimates of the number of large nonfarm controlled corporate farms in 1970 ranged from 400 to 900. Although these giant industrialized farms are not large in number, they can have a substantial impact on farming—particularly if they concentrate on a relatively minor commodity.

Issues in the production sector.

Large cooperatives and marketing orders: In general, producers have little power and control. However, large marketing cooperatives in combination with marketing orders can exercise considerable power and control in the system.

Corporate farms: The possibility of large corporate farms coupled with coordinated processing of a differentiated product has implications for control of the food system.

Production planning and risk: Producers received a residual price from products sold in a market system. Consequently, changes in consumer demand and food prices are largely reflected in prices for agricultural products. This tends to transfer market risk to producers, disrupts production plans and contributes to production cycles and variations.

Bargaining: A relatively small share of agricultural production is marketed through bargaining groups. However, this activity, which may increase over time, could have supply, quality, and price implications.

FARM SUPPLY INDUSTRIES

Some of the important purchased farm inputs are shown, with the estimated farm expenditures for 1973, in Figure 4.

Since suppliers of livestock and farm labor seem to have little potential for power, attention is focused on the remaining inputs. Three stages are involved before the product is sold to farmers: manufacturing, blending or storage, and retailing. Concentration of power is greatest at the manufacturing stage and tends to decline considerably at the other two stages.

Farm Machinery

Farm machinery manufacturers represent considerable market power. A small number of major manufacturers (seven "full-line" companies) operate on a worldwide basis. In 1972, the largest four captured about one-half of

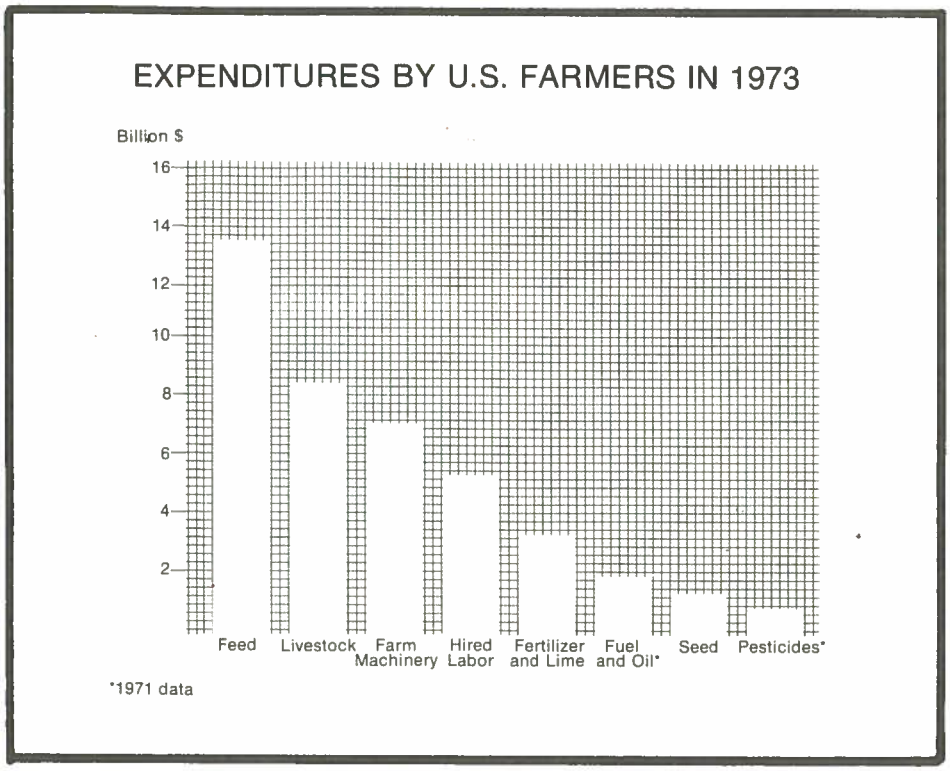


Figure 4

he world farm machinery sales. These firms have successfully differentiated their products in the eyes of armers and entry into the industry as a full-line company is difficult. The seven full-line companies are also large diversified firms with farm machinery accounting for about 50 percent of their sales.

The structure of this industry provides opportunity for rice and output management by the largest firms, which would result in higher machinery costs to farmers. These firms have little incentive however, to integrate forward into farm production. Thus, their main impact on food production is likely to be in the cost of machinery to armers.

Commercial Feed

Concentration in the feed manufacturing industry is modest, brands are relatively unimportant, and entry is elatively easy. The largest feed manufacturers are large liversified companies. Only one-third of the 1970 sales of he four largest companies stemmed from feed. Farmer ooperatives are relatively important in feed manufacturing and distribution, and account for about 20 percent of he market. They are often a stimulant to competition.

Of all the farm input industries, however, feed manufacuring has the greatest amount of direct control over farmng. With relatively little market power, one of the alternaives for gaining customers to "purchase" their right of hoosing the type of feed. Thus, most large feed manufacurers have become involved in contract integration with oultry and egg producers, and to a limited extent with og producers and beef feedlots. These contracts genrally involve a transfer of risk from producers to feed uppliers with guaranteed minimum payments to roducers.

Efficiencies gained from large feed manufacturing plants are modest and transportation costs are high. Thus small feed manufacturing facilities have been erected in areas of livestock or poultry production.

The power of feed manufacturers to manage the supply and price of feed is small. Their greatest impact on the control of the food system is through contract integration into livestock and poultry production. Together with other integrators such as meat, poultry, and egg processors, these firms coordinate and control about 90 percent of U.S. broiler output, 20 percent of the eggs, 42 percent of the turkeys, and 5-10 percent of the fed beef.

Since contract farming in livestock and poultry usually involves substantial transfer of decision control and can place producers in a weak bargaining position because of limited alternative uses for their fixed investments, it is the most important type of contract farming to monitor.

Chemical and Petroleum Inputs

Although networks providing fertilizer, pesticides, and petroleum products to farmers are distinct in many respects, there is a commonality in the supply systems for these inputs. All three inputs are dependent upon petroleum products as "feedstocks." Many pesticide products are manufactured from petroleum derivatives and nitrogen fertilizer manufacturing relies heavily on natural gas.

It is not surprising that several major oil companies are involved in the manufacturing of fertilizer and pesticides. In 1966, three of the largest eight oil companies were among the top 10 producers of nitrogen fertilizers; the ninth and eleventh largest oil companies were among the five largest producers of phosphate fertilizers; and six of the eleven largest oil companies in 1964 also produced pesticides. Most of the major producers of these three

inputs are diversified petroleum or chemical companies in which farm product sales are a minor part of their business.

Power is greatest at the manufacturing level for all three of these inputs, with less appearing at the blending/storage and retailing levels. Pesticide manufacturing is relatively concentrated, product differentiation is high, and entry is difficult. Concentration is moderate in fertilizer manufacturing. Although product differentiation is relatively low and scale requirements are moderate, entry into fertilizer manufacturing has become more difficult due to the problem of gaining access to necessary raw materials (natural gas, potassium deposits, and phosphate rock). The largest oil companies have considerable power at all levels from crude oil production to refining to bulk terminals to retail distribution; however, their power is probably greatest at the refinery stage.

Farmer cooperatives have become increasingly important in the retail sale of these three inputs. In 1970, they sold 32 percent of the fertilizer and lime, 22 percent of the pesticides, and 26 percent of the fuel oil purchased by farmers. A substantial portion (67 to 100 percent) of the fertilizer and petroleum fuels sold came from manufacturing and refining facilities jointly owned by several regional cooperatives. However, only 13 percent of the crude oil refined by cooperatives came from cooperative owned oil wells. With their integrated operations, cooperatives provide healthy competition as long as they can obtain the necessary supplies for their manufacturing and refining operations.

Control by large chemical and petroleum companies over crude oil and natural gas supplies provides these companies with considerable power when necesssary feedstocks are in short supply. When supplies are plentiful, this source of power is diminished. These firms also manufacture or refine a major portion of the nation's fertilizer, pesticides, and petroleum products. When there is excess manufacturing capacity, as was true for fertilizer in the late 1960's, price and manufacturer profits are low. However, when either manufacturing capacity or the supply of necessary feed stocks are inadequate, shortages lead to high prices and profits. Thus, the effects of these firms on the food system depend on supply conditions for crude oil and natural gas, and the capacity of oil manufacturing and refining facilities. The effects will largely be registered by the cost of these inputs to agricultural producers.

Issues in the farm supply sector

Entry: Capital and technical scale requirements for farm machinery, basic fertilizer manterials, pesticide, and petroleum production and manufacturing are large and entry is difficult. However, agricultural producers have entered all of the industries through the joint venture of their supply cooperatives. Although there is potential for monopoly power in several of the industries, farmer cooperatives have often had a governing influence.

Control over agricultural production: Large feed manufacturing companies have substantial control over parts of agricultural production, largely through contracts. Control by farm supply industries may increase as the capital needs in farming increase, farming becomes more specialized, risky, and farm supply firms try to assure future business.

Capital and technical scale requirements for farm machinery are large and entry is difficult.

A NOTE ON FOOD MARGINS AND PRICES

Food prices and marketing margins have had an interesting pattern during the early 1970's. A wide range of influences have combined to make our food supply more expensive.

Figure 5 shows the changes in farm, wholesale and retail prices for food products for 1972-75. In late 1972 the prices of food commodities began to increase very fast. By August, 1973, the cost of food products at the farm was more than double the 1967 level. This gave a jolt to consumer food prices and was related to massive shipments of U.S. food overseas.

After August, 1973, the costs within the marketing system began to increase rapidly and added to the already high cost of food. This was primarily caused by inflation in the economy. The marketing margins or costs are closely related to the Wholesale Price Index, which is an indicator of the increasing cost of goods and services to food marketing companies. Increases in the cost of fuel and wages are important influences in the Wholesale Price Index. The rapid rise of wholesale prices suggest that these costs will be passed into consumer prices in future years.

Future prospects include some chance that farm commodities will decrease in price. However, inflation of input costs (wholesale price index) affects the farm as well as other firms. It seems unlikely that the general level of inflation will be reserved (the rate of increase may be slower). Therefore, prospects for reducing marketing costs are small. Since profit margins are not unusually high in most food marketing industries, reducing marketing costs requires increasing productivity, avoiding wasteful practices, or reducing services performed.

POLICY IN THE FOOD SYSTEM

Public concern with the food system centers on performance: does it efficiently and competively deliver products in the form, quantity, place, and time demanded by consumers? Loci of power and control at various points in the system may reduce its efficiency, distort the economic signals, and produce less than satisfactory performance. When this occurs, public or private action is needed to improve the level of performance. One approach is to regulate performance directly. Examples include price controls, fair trade laws, and production quotas. Performance regulations, however, are usually difficult and costly to administer, and may interfere with competition. Consequently, policy instruments are usually directed at establishing a market structure or regulating firm behavior as to achieve improved performance.

Market Structure

One of the most common policy approaches has been to regulate the size and/or number of firms in a market through anti-trust legislation and inforcement. This may be achieved by controlling the size and power of large firms or by increasing the power of weaker participants in the system so they can deal more effectively with the stronger groups. Examples include the formation of producer purchasing and market cooperatives, bargaining associations, marketing orders or marketing boards for particular commodities, and voluntary and cooperative retail grocery groups. These activities may depend upon special legislation and the establishment of special sources of credit.

Alternative proposals have centered on a reduction of power in the system. These may involve breaking up large firms, preventing mergers, or regulating vertical integration in the food system. At the farm level, it could mean restricting conglomerate entrance into agricultural production and membership by nonfarm cooperatives in agricultural cooperatives.

Conduct Regulation

Another frequent policy approach has been the regulation of firm conduct. Examples include the regulation of predatory competitive practices, labeling and packaging legislation, grades and grading, sanitation and quality specifications, and weights and standards. Proposed regulation of advertising could have a significant impact on conduct and performance in some food industries. Other possibilities are limitations on the sphere of activity in the differentiation process.

Consumer Activity

Many consumers feel their sovereignty in the market place has been reduced and seek to express themselves by means other than through product purchases. They believe that the food system is strongly influencing a significant share of consumer purchases and does not respond as readily to consumer demand as is desirable. Consequently, organizations have been established to communicate concerns to food producers, manufacturers and marketers, and in some cases, to change the rules of the food marketing game. Unfortunately, the message of consumers frequently has been garbled, ineffective or inaccurate because of a lack of technical information. More scientific competence is needed for the consumer movement to improve its effectiveness.

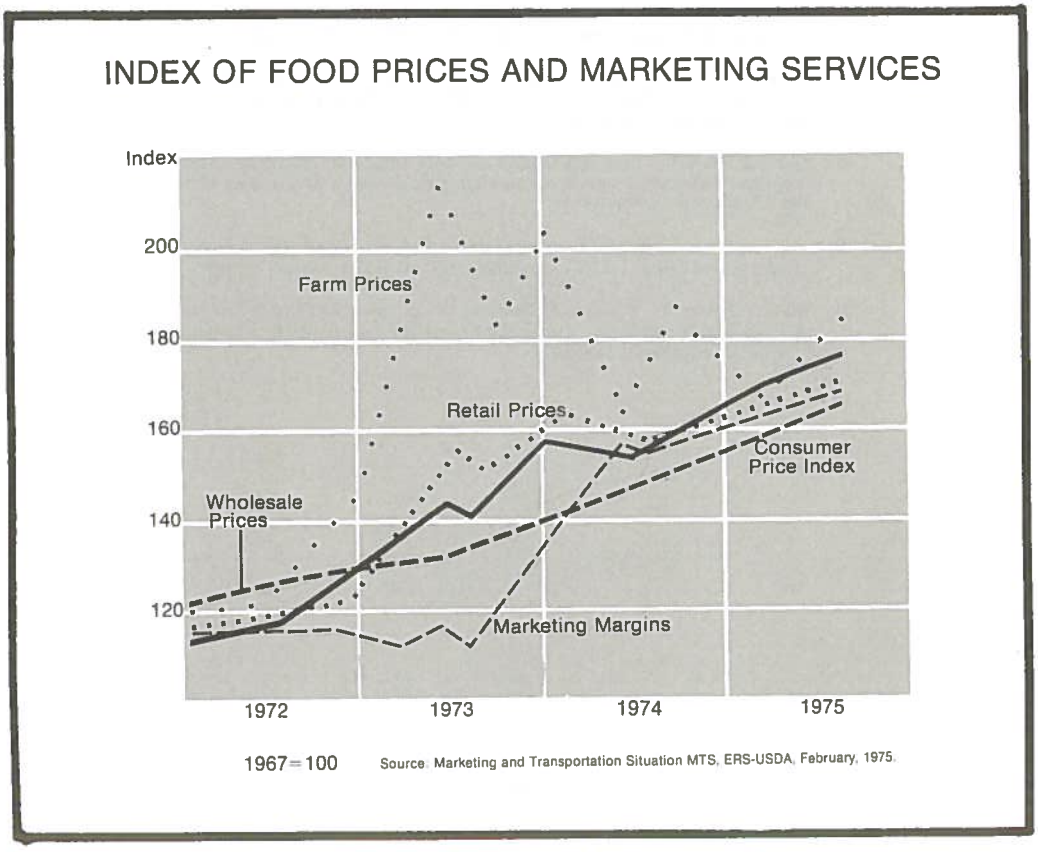


Figure 5

Information and Food System Interfaces

As more technology becomes available it is more important that each stage in the food system interface smoothly with others. Vertical integration has been one method of achieving improved coordination. A more streamlined, efficient system would be possible with standardized packaging, shipping containers, and communications systems so that firms interface smoothly at each stage. The new Universal Product Code now in operation may have significant effects on the total food system efficiency and logistic systems.

Information Needs

More information is needed about the food system and its various parts. Public information regarding conglomerate firms is especially inadequate. The stockholding and public alike need more detailed information and data on specific lines of businesses within conglomerate operations. In addition, producers and food firms not engaged in manufacturing or marketing final consumer food products need more and better information regarding consumer demand in order to do more effective production scheduling, planning, and marketing.

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This chapter is concerned with the behavior of the political system in formulating U. S. food policy. The authors examine some of the forces influencing food policy. They point out that the politics of food policy has become more intricate as new participants have been added and the composition of old groups has changed.

The authors also provide some guidelines for conducting food policy educational programs. An example is used to illustrate the decision-making process.

You, as an individual and as a member of an interest group, can participate in formulating food policy. By being informed, voting, and being active in political organizations and interest groups, you can influence food policy decisions.

6. POLITICS AND FOOD POLICY

Barry L. Flinchbaugh, Kansas State University
Carole B. Yoho, University of Minnesota

People here and abroad are concerned about food—its vailability, cost, quality, distribution, profit opportnities, and its contribution to peace. Many world leaders re seeking solutions to what they see as problems of rgent public concern regarding mankind's food supply. Vill food supplies be adequate? Will surpluses exist or will hortages and famine persist? Will available food supplies e shared? On what terms and under what conditions will ıe sharing be done? Will food be safe and nutritious? ublic policies in regard to food will be a major factor in etermining answers to these questions.

Public policy is an identifiable course of action by government directed toward the general welfare of a nation. It s through the political process that diverse interests and ivergent views about economic and social problems and overnment's role in dealing with them are debated and ompromised. Food policy, like any public policy, is a roduct of the political system. Formation of food policy is continuing process as old policies are modified and new ıes formulated to meet changing needs and problems. 'olicy implementation comes about in diverse ways—aws, programs, regulations, and court decisions.

But, what forces influence public decision making on ood policy issues? Who are the participants and how can individuals and groups influence the development and implementation of public policies affecting food?

FOOD POLICY-MAKING: THE PARTICIPANTS

Several decades ago, participants in food policy formulation (called farm policy then) were few in number and easy to identify; primarily the general farm organizations and a bipartisan group of Congressmen from the Midwest and South. Included to a lesser degree were the U.S. Department of Agriculture (U.S.D.A.) and the land-grant universities. By and large these major groups designed farm programs and possessed sufficient political leverage to pass legislation.

This situation has changed. Today everyone seems to be getting into the act. Not only are farm programs of concern to a wider variety of interests but the focus is being explicitly broadened to "food policy." Attention is not only on food production but on helping those in need at home and abroad, food quality and safety, the food distribution system, and environmental and safety concerns.

State and local governments tend to have a larger share of the action in policies relating to food than when the

Apreciation for counsel is extended to Eloise S. Cofer, North Carolina State niversity; Doyle Spurlock, Extension Serivce-U.S.D.A.; Tyrus R. Timm, Texas and M University; Arley D. Waldo and Evelyn P. Quezinberry, University of linnesota.

focus was on farm policy. However, this chapter will focus on the national level.

Congressional Committees

Committees most closely identified with food policy are the Senate Agriculture and Forestry Committee and the House Agriculture Committee together with the appropriations subcommittees for agriculture and food programs in each house of Congress. These committees act on authorization and funding of programs related *directly* to food policy.

Not long ago, these committees were composed almost exclusively of members from farm-oriented districts of the House and Senators from states with substantial economic ties to agriculture. Committee leadership was drawn largely from the South where cotton and tobacco interests dominated, and from the Midwest wheat producing areas. These were the majority and minority members who sat on the all-important conference committees.

The combination of long experience and service, overlapping leadership positions, and capacity to build coalitions that was represented in the membership of the committees mitigated the effects of the general loss of farm-oriented Congressmen for several years. Also, the agricultural production and commodity orientation of the committees continued to be dominant in part because newly elected members from nonagricultural districts or states neither sought nor welcomed agriculture committee assignments.

In recent sessions of Congress, substantial numbers of urban and consumer oriented congressmen have been added to the committees—especially in the House of Representatives. Although farm commodity and production orientation is still reflected in the makeup of the agricultural committees, there are now a number of committee members whose main interests lie in other areas affected by committee action such as food distribution programs, conservation, environmental protection and safety, plus a wide range of consumer issues.

Executive Departments and Agencies

The U.S.D.A. and the Secretary of Agriculture can no longer be regarded as the "farmer's department" or the "farmer's man." Farm commodity programs are only one part of departmental activity. Food distribution programs and policies, both domestic and foreign, make up a large part of the departmental budget and workload. Consumer concerns, farm interests, agribusiness perspectives, food program participants and foreign trade and aid are all considered at the department level.

The Secretary of Agriculture has a substantial role in both policymaking and policy implementation. In policymaking, the Secretary attempts to "mesh" food policy into overall executive policy. He functions as a "broker" or intermediary between Congress, the President and his executive staff, farm interests, agribusiness firms, consumers, and the diverse membership of the agricultural committees. He will be especially sensitive to the potential political impact of his actions and the image created on his political party's chances in general elections.

In the policy implementing role, the Secretary of Agriculture must administer a large department that is responsible for carrying out the food and farm policies developed through legislation, in court decisions, and by regulation. His administrative function may sometimes be complicated by the fact that many high level administrators and influentials in the U.S.D.A. have close ties to key Congressmen and/or to organized groups such as the general farm organizations, specialized commodity groups, agribusiness firms, and the land-grant university system.

The Office of Management and Budget (OMB) within the president's staff plays a major role in approving and executing U.S. food policy. As the President's budget arm, the OMB evaluates policy and program proposals from a cost viewpoint. Programs are examined and departmental budget proposals evaluated in terms of their impact on the total budget and Tresaury costs. Costs are a major constraint.

Actions and policies of other departments and agencies within the executive branch may have both *direct* and *indirect* impacts on food policy—though food policy is not their main concern. For example, officials charged with formulation of general economic policy, like the Council of Economic Advisors, are concerned with prices at home. The Council of Economic Advisors and Treasury officials are particularly interested in agricultural exports, which have been the biggest earner of foreign exchange so important in maintaining our balance of payments. Policymakers in the State Department are concerned with how trade policies, programs of food aid, and technical assistance affect our relationships abroad.

Other cabinet departments whose activities include legislation, regulation and enforcement that may affect food policy, are Interior, Justice and Labor. Land use policies and programs of the Interior Department have an impact of food policies. The Justice Department acts through its anti-trust authority. The Labor Department has an interest too, since food processing, transporting, and merchandising require use of labor.

Various agencies play roles in making and carrying out policies related to food in the course of their regulatory activities. The Food and Drug Administration, the Environmental Protection Agency, the Interstate Commerce Commission, Occupational Safety and Health Administration, and the Federal Trade Commission are some of the more important. Growing public concern over pesticides, food additives, the impact of advertising, and other matters will probably expand the role of regulatory agencies in food policymaking.

Environmental and safety requirements are designed to improve the general welfare of workers and citizens, but they are costly and eventually consumers pay more for the food they eat.

Interest Groups

Many diverse interest groups are concerned with food policy. Most fall into three general areas: producer, agribusiness, and consumer and/or labor interests.

1. *Producer Groups:* Principal producer groups may be classified as general farm organizations or com-

ɔdity organizations, although there are other funcɔnal groups. Major general farm organizations are the ɲerican Farm Bureau Federation, National Farmers ganization, National Farmers Union, and National ange. They encompass a cross section of farming inrests and geographical representation.

While they work to improve the economic position of rmers, there is often disagreement between them on how accomplish the goal. Commodity groups are repreɲted within general farm organizations. Therefore, neral farm organizations are often divided internally on ecific policies. For example, grain farmers are inrested in an open foreign trade policy, while cattlemen ıd dairymen are fearful of expanded competitive imports ıd are concerned over large volumes of grain exports, pecially when harvests are small.

Commodity groups are increasing in number and they em to be gaining in strength. Dairy associations, livesck groups, soybean growers, wheat growers, cotton oducers, and citrus producers are examples. They ave fewer numbers but are more cohesive than the genal farm organizations. They have a natural alignment ith commodity subcommittees of the Congressional griculture committees and commodity sections of the J.S.D.A. Their existence means neither the U.S.D.A. or general farm organizations working alone can ɔminate food policy.

2 **Agribusiness:** Purchased inputs and machinery are gnificant cost items in farm production. The manufacre and sale of equipment, fertilizer, pesticides, fuel, etc., big business and suppliers are very interested in farm ıd food policies that will affect their sales and profits.

Farm credit institutions and large cooperatives are conrned with various aspects of food policy.

Food normally undergoes processing as it moves from e farmer to consumer. New packaging techniques, popurity of convenience foods, dominance of certain brand ames, and degree of concentration of food chains are ɔme of the reasons why processor and retailer organizaɔns are involved in the food policymaking process.

3. *Consumer and Labor Groups:* The number of conımer groups (Consumer Federation of America and Conımers Union, for example) are increasing in number and ecoming better organized. Although many are concerned ith a broad range of consumer interests, food policy is gh on the priority list of many. The rapid increase in tail food prices has placed the price of food on the food ɔlicy agenda.[1]

Consumer representatives testify in legislative committe hearings, participate in government advisory councils, ake input into regulatory proposals of government agenes, and participate in political party activities. Consumer actions to food distribution, agricultural bills, and ecutive policies affecting food are consciously sought ıd considered by Congress, the U.S.D.A., and the resident.

Labor unions are interested in food policy for several asons, not the least being their strong interest as consumers. Food processing, transporting, and merchandising require considerable use of union labor. Union rules affect the cost and distribution of food. Minimum wages, fringe benefits, and workmen's compensation were put on the food policy agenda by the unions.

Journalists and mass media personnel present food related issues to the public.

4. *Others:* In addition to organized interests and governmental bodies already mentioned there exists a pool of individuals who through experience, position, or activities have a role and an impact on food policy. Journalists and mass media personnel present food related issues to the public and more or less transcend the entire policymaking process. Some persons in the media may play a leading role in calling attention to food issues. If enough people decide that an issue is important, it gets on the food policy agenda. A case in point a few years ago was the TV documentary on federal farm program payments to large land owners and corporate farms. Payment limitations were enacted into law. Starvation in the world and hunger in the U.S. are other examples of food policy issues brought to the forefront by the various media.

Our customers abroad can now influence U.S. food policy more effectively than ever. Their actions in regard to policies affecting trade in agricultural products and/or economic development can affect both foreign policy and food policy. For example, the Soviets and Chinese, through the policy of detente, have become a vital part of our grain market. U.S. policies restricting trade in milk, cheese, and meat may be placed on the agenda for negotiation under the General Agreement on Trade and Tariffs (GATT) by other nations. The U.S. places on the GATT agenda restrictive trade policies of many nations, particularly of the European Community.

The energy crisis and influence of the Organization of Petroleum Exporting Countries (OPEC) have placed the cost of petroleum and fertilizer on a higher rung in food policy. The recycling of "petro-dollars" forces the U.S. to look at monetary and foreign investment policies.

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od Policy Agenda--A list of items, problems or issues in the broad area of food licy. Examples include: the establishment of a grain reserve, food stamps, school ıch, feed the elderly, price support programs, the use of pesticides, food aid to ıs developed countries, grain embargoes, and the price of food in general.

THE POLITICS OF FOOD

The politics of food have grown more complex as the number of participants at home and abroad have expanded and the complexity of the issues has increased. As a result, today's farm legislation is written to include both farm production and food distribution programs. Congressmen seeking to pass commodity legislation must have support from urban members. Conversely, many urban members support farm bills in exchange for rural members' support to expand food distribution programs.

In times of depleted food reserves an argument used for support of commodity legislation is the necessity of improving incentives to farmers and minimizing their risks by providing an income floor to assure adequate farm production. Urban congressmen have accepted this argument but insist upon two conditions: (1) limitations on payments made to farmers; and (2) maintenance of domestic food aid programs. Whether these kinds of compromises will form the basic foundation of future food policy and legislation is an open question.

A role in food policy is played by such diverse human, natural, and social factors as weather conditions, changes in congressional rules, procedures, and organization (such as the Budget Control Act and the seniority system), political party caucus strategy in Congress, and the general state of the economy. The capacity of Congressional leadership to negotiate coalitions and alliances on issues of concern to their diverse constituencies will be a factor in food policy also.

In the future, will partisanship play a more dominant role in matters of food policy? Will majority voting coalitions be more dominate at the House level? Will the Senate again be the initiating body for food policy legislation on the basis that Senators typically represent a wider range of economic and social interests? Will Congress give the President discretionary power? Will the courts be used more frequently by groups dissatisfied with results of the legislative process?

How effective will various organized interest groups be in getting their viewpoints reflected in the process? Certainly their success will be affected by their organizational capacity to: (1) research and formulate positions, (2) recognize the need for flexibility and compromise when necessary, (3) know and work with potential friends and allies, and (4) understand the political process.

YOU AND THE POLITICAL PROCESS

As an Individual Citizen

You can participate in politics in numerous ways. Be informed on issues. Sort facts from propaganda. Vote. Belong to a political party. Try to influence the party platform. Help to choose the party leadership. Work to recruit candidates. Work in election campaigns. Run for elective office. Attend legislative committee meetings and hearings on matters of concern. Communicate with your elected representatives. Present your viewpoints on issues in person, by letter, telegram, or telephone. Have your name put on your Congressmen's mailing lists. Belong to an organized group and be active in its affairs.

As a Member of an Interest Group

Organized interest groups are a very important part of the political process. They are a means by which people with a common interest can band together to have a stronger voice in government than they could have as individuals. Most groups operate on a representative basis with elected delegates and officials acting for the entire membership.

A number of strategies and tactics are commonly used by groups to influence policymaking and policy implementation. "Influencing" can mean attempting to kill bills and change regulations contrary to the interests of the group as well as enacting those favored by the group. Influence can be through:

1. Maintaining contact with Congressmen through both their Washington and local offices. Contact by a group member who is a constituent is much more effective than contact by a nonconstitutent member. It's often effective to work with those who influence a public official—for example, members of his staff, his friends, and his business or political colleagues.

   Personal contacts between group members and Congressmen can be very effective. A trip to Washington by carefully selected representatives of interest groups may not only impress Congressmen, but it may also serve to publicize the organization and its goals. Organization members should attend public hearings and legislative committee meetings; sometimes members of Congress are invited to appear at the organization's meetings. Most large and successful interest groups employ full-time lobbyists to work with Congress and the executive branch.

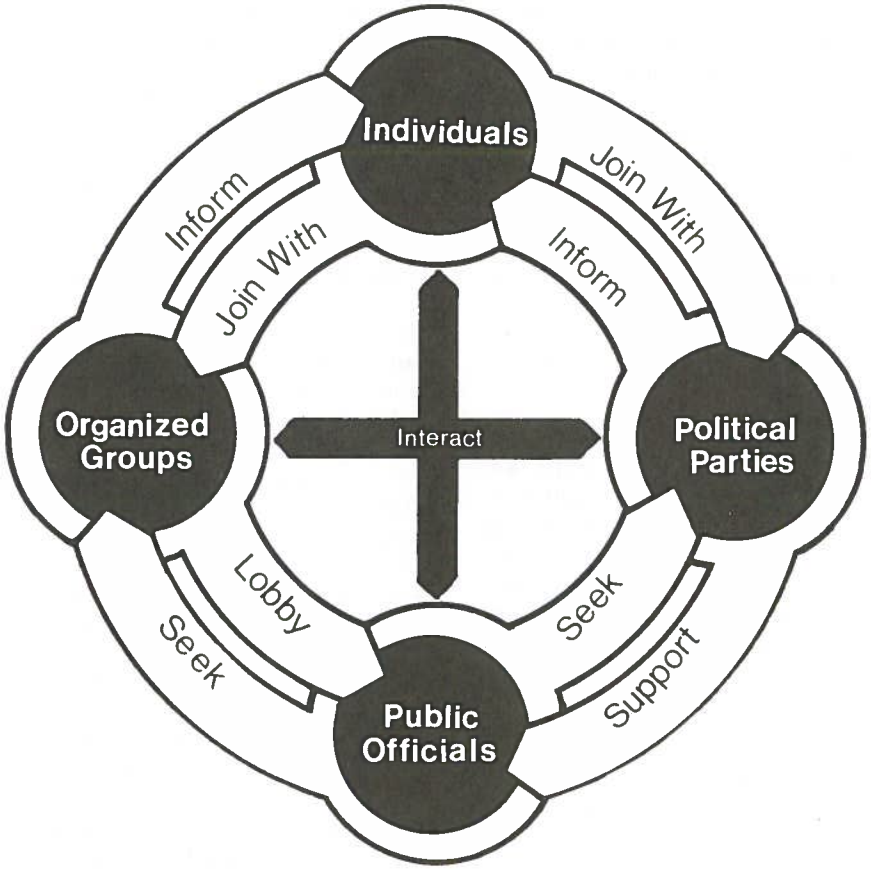
2. Writing bills and asking Congressmen to introduce them. Be discriminating in this activity and do your homework. Such efforts serve to clarify statements of the organization's stand for its own members and the Congressman. The bills may serve purposes other than getting a law passed—they may be used to generate publicity, stimulate discussion of an issue, expedite executive or judicial action, and counter other bills introduced to the legislative body. With the widening array of active food policy participants, the effects of proposed legislation on the people involved is especially important.

3. Bringing pressure upon Congressmen. When a Congressman is undecided or opposed to a bill favored by the group, pressure is often exerted in the form of personal visits by key leaders of the organization. At times, letter writing or phoning campaigns by members "back home" may be effective. Applying pressure successfully in these instances requires timeliness. It is important to know what kind of effort is likely to be most productive at a given stage of the legislative process.

4. Forming alliances with other organized groups to increase support of a bill or policy. Coalitions tend to be temporary and limited to well defined purposes.
5. Testifying at committee hearings or other public hearings by organization leadership.
6. Publicizing voting records.
7. Monitoring regulations, proposed regulations, and administrative procedures of various governmental departments and regulatory agencies.
8. Influencing appointments to key positions in government.
9. Issuing publications, press releases, and other information on issues.
10. Going to court. Organizations may become involved in litigation to test the constitutionality of a law or administrative practice; they may seek injunctive action through the courts; they may participate in class action suits. Indirectly, they may seek to influence the selection of judges.

Needless to say, this list is not exhaustive. It also refers to action at the Federal level. However, it should be obvious that strategies and tactics of groups operating at the state level are similar. Figure 1 schematically illustrates the interplay of various groups and people in policy formation.

Policy Formation: Food Policy



Public Officials include Executive Departments and Agencies, Congressional and Legislative Committees, Regulative Agencies

Organized groups include Farmers, Consumers, Labor, and Agribusiness

Political Parties include National and State

Figure 1

FOOD POLICY: AS AN EDUCATOR

Public policies are products of the political system. The function of the political system is to help design programs, resolve conflicts, and arrive at a concensus. "Politics" is the means of making public choices and the educator must understand why people differ about policy matters.

Our political system places a high value on the worth of the individual and his right to participate in the political process. Although our system of government is based on the will of majorities, it recognizes and accepts that individuals differ in their values and beliefs.

Values and beliefs affect problem perception, the setting of policy goals, and the formation of judgements about appropriate means to achieve goals. An individual's beliefs are based on what he feels to be the facts in a given situation, Hopefully, people's beliefs should be based on facts to the maximum extent possible. The educator must accept the fact that peoples values differ.

Compromising differences in values, beliefs, and goals into workable policies acceptable to the relevant majority is what "politics" and the political process is all about. For this and other reasons, no optimal set of food policies can be discovered scientifically.

What role then can the educator play in the formulation of food policy? The goal of public policy education is to increase the level of understanding of public issues. The role of the educator is to help people improve their level of understanding of facts and the policymaking process so they can influence decisions. This can be accomplished by placing the problem in a decision-making framework. The process may be divided into a number of stages or steps. Although these steps appear to be separate from one another, the process is not nearly so orderly and logical as such a listing suggests.

Stages or steps included are:

1. Recognizing and defining the problem clearly and concisely. People often say "something ought to be done." They feel there is a gap between the existing situation and a goal they feel desirable. Goals are frequently expressions of "what ought to be." People do not all agree upon the policy goals to be achieved, goals may be in conflict, and different people weigh goals differently.

2. Outlining the alternative solutions and helping in analyzing their consequences upon the relevant groups. As discussion and debate occur, the problem, various choices, and impacts of each choice may become more evident. More clarity is developed.

3. Leaving the selection of the course of action to the public. As pointed out earlier a complex variety of participants and groups exist in the political process and all are developing strategies and setting priorities to assist the political process in making the public choice.

Implementation of the policy decision will occur when (1) laws are passed or defeated, (2) programs established and/or regulations changed, (3) court decisions made or rescinded, and (4) operating procedures adjusted. Of course, the decision may be to leave things as they are, requiring no action or implementation.

To accomplish the above, an educator must try to remain as objective as possible, avoid value judgements, and have a basic faith in the ability of the political process to develop workable solutions to societal problems.

An educator may occasionally serve as a "decision assistant" to policy makers. Sometimes policy makers want to explore the consequences of a particular proposal or seek advice about a bill being drafted for introduction into the legislature.

In general, the educator's role is to be "on tap, not on top."

A Brief Illustration

Perhaps the model will become more clear if we illustrate by using an actual food policy issue—the establishment of a food reserve. Other issues on food aid abroad, food stamps, farm programs, etc., could be used.

Although what follows is a gross simplification, the steps in the process are demonstrated even though only the rudiments of the subject are included. References supplying additional information on the food reserve issue, the policy choices and their consequences can be secured from references (2), (5), and (9).

During the days of "surpluses", the U.S. government held title to considerable amounts of grain stocks. Today government held grain stocks or reserves are comparatively low.

The Problem: Who should control grain stocks?[2]

Given our productive capacity, there will be stocks. Stocks may be large or small, depending upon weather. A major question is not should there be a grain reserve, but rather "Who should control it?"

Alternative 1: Farmers and the grain trade. This is essentially the policy today.

Consequences: The market is relatively free from the effects of government stocks. Farmers can hold grain in hopes of a higher price. Speculators can buy and sell relatively freely. Government cannot manage supplies. Consumers pay the costs in higher food prices in times of tight supply-demand situations. The U.S. government or international food agencies need to go into the marketplace and buy supplies when needed for an emergency or for shipment to needy countries. Likewise other countries must purchase grain and build their own reserves. Such purchases have a price increasing effect on the market and taxpayers incur the acquisition costs. Prices will fluctuate widely at the farm level. The cost of grain production will be paid for in the long run in the marketplace with no, or very little, subsidy from the U.S. Treasury.

Alternative 2: The U.S. Government stores grain.

Consequences: Unless the government acquires grain through a commodity program in times of surplus, it would have to purchase stocks in the marketplace. Such purchases would increase farm prices during acquisition

[2]Related problems exist; for example, how much of a reserve is necessary or sufficient and at what prices should it be acquired or released. However, this illustration is confined to the question of "Who should control the reserves?"

and the government would then have stocks available prior to an emergency at home or a famine abroad. The reserves serve as an "umbrella" over the marketplace and would prevent farm prices from rising as much as if there were no government held stocks. Political pressure would be applied to release stocks in case of low supply and correspondingly high food prices. Farm and food prices would fluctuate less. If the objective was to lower food costs, subsidies might become necessary to compensate farmers, thus increasing storage and thus taxpayer costs.

Alternative 3: United Nations food agency.

Grain producing nations would be asked to contribute grain while non-producing developed nations would be asked to participate through cash payments. Grain reserves would be released as grants in times of natural disaster—not into commercial channels.

Consequences: Stocks would be available for emergency use in times of natural disaster, such as floods, earthquakes, and drought and this reserve would depress the market less. All developed nations would be contributing; not just the U.S. and other grain producing nations. Countries would lose unilateral control of stocks they place in the international reserve.

Effects on domestic farm and food prices would be somewhat similar to alternative 1, but the magnitude would not be so great. However, the U.S. taxpayer would be asked to contribute to the cost of the United Nations food agency.

None of the above alternatives may be completely satisfactory and a combination of the three might emerge as the "best alternative."

A seminar on this problem for leaders would, of course, elaborate greatly on the consequences of each of the alternatives. Accompanying issues of how much grain should be held in reserve, at what prices should stocks be acquired, and at what prices would they be released and to whom, would be included in the subject matter.

SUMMARY

The politics of food is an ever changing and dynamic process. Public policies for food are no different than other policies—a product of the political process. The participants now include many non farm interest groups, government officials, petroleum exporting countries, and foreign buyers in addition to the traditional general farm organizations and commodity groups. Individuals and groups, through our democratic system, can enter into the process and influence decisions regarding food policies of this country. It is, after all, YOUR FOOD.

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