

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

Dr. Clayton Yeutter*

Introduction

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

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

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

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

*President of the Chicago Mercantile Exchange, and former Assistant Secretary of Agriculture

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

Supply Outruns Demand

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

SHORT RUN ACTIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

LONG RUN ACTIONS

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

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

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

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

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

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

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

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

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

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

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

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

Demand Outruns Supply

SHORT RUN ACTIONS

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

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

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

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

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

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

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

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

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

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

LONG RUN ACTIONS

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

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

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

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

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

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

3. Assist Lesser Developed Nations With Food Production Potential.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Conclusion

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

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