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PARITY FOR AGRICULTURE

By

Roy Black
John Brake
Ronald Cotterill
John Ferris
Vern Sorenson

Department of
Agricultural Economics
MICHIGAN STATE
UNIVERSITY
East Lansing

PARITY FOR AGRICULTURE

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Agricultural Policy Issues by the Staff of the
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Michigan State University

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PARITY FOR AGRICULTURE - A PERSPECTIVE ON THE CURRENT FARM SITUATION

By John Brake

For the last few weeks and months there has been a great deal of news coverage and much interest in the farm situation. Farmers have organized tractorcades and other parades to demonstrate low farm prices. They say their incomes are down and they must have higher prices. Consumers see continued increases in many prices at the grocery store and are concerned about possible further increases. What are the facts? What is the economic situation of farmers? What is parity and what would parity prices accomplish? What is the government doing, and what might it do to alleviate the farm problem? Can the problems, if they exist, be solved to everyone's satisfaction?

The purpose of these materials is to provide information on the economic situation of farmers and of the farm economy. Our stance is not to advocate a position but to present the data, the alternatives, and the implications as best we can. Our role is educational, not advocacy of a position; and in following that role, we are likely to be criticized whenever the facts don't suit one side or the other in the controversy. Still, as an educational institution, nonadvocacy must be our role.

There are several basic points to be made concerning the current situation. First, farm prices are, in general, down from their levels of the past few years, and aggregate net farm income in terms of purchasing power, is the lowest in some 40 years. Second, the farmer situation is tremendously variable. Few farmers are on the verge of bankruptcy at the moment <u>from poor prices alone</u>, though most farmers are concerned about the current price and income situation. Third, grocery and food prices have continued to increase in general, but the culprit is not the middleman. Indeed, the food industry is not a particularly profitable industry.

This article will attempt to deal with the three points raised above and to elaborate on each. There is a fourth point which needs to be dealt with and thought about as one reads the additional materials that will follow. A market situation, with buyers and sellers, is a basic conflict situation. To say it differently, it is most difficult to have your cake and eat it too. Higher market prices benefit sellers and hurt buyers. Lower market prices make the reverse true. Most everyone would agree to this point. Farmers have asked for "parity" as a target. But parity has at least two meanings. One concept or idea of parity implies fairness or comparable treatment, that is, "on a par with." That idea appeals to farmers because they feel their earnings should be comparable to earnings of others in our society. Parity also has a legislative definition which relates prices of commodities to a

base period. Basically, this latter concept would set prices of farm commodities to obtain the same purchasing power as in 1910-14 (except for some modification). But, parity prices do not necessarily mean parity incomes: The small farmer's production is too little to achieve parity income by way of higher prices; the large farmer would likely obtain substantially more than parity income from parity prices. The difficult question is, what is a "fair" piece of the pie for the farmer, how can it be achieved, and what will it cost, directly and indirectly? These are public policy questions involving both farmers and consumers. Ultimately, through government or through some other means, such questions will need to be resolved.

We believe that this package of materials will lead to improved understanding of the farm situation by both farmers and consumers and may help us all to make improved public decisions. Now let's turn to further discussion of the first three basic points.

Farm Incomes are Low by Historical Comparison

An examination of the aggregate net farm income of all U.S. farmers in terms of what that income will buy, that is, income adjusted for inflation, indicates that in 1977 total U.S. net farm income was the lowest since the 1930's (see Table 1). In 1977 net farm income was down to about $10.5 billion dollars in terms of 1967 purchasing power. This compares with $17.3 billion dollars in 1974 and $25.07 billion dollars in 1973, the year that was an all-time high. Real income was in the $12 to $14 billion dollar range during the 1960's, expressed in '67 dollars, but it has not been as low as $11 billion dollars since 1936.

Average income per farm in 1976 was $7203 (equivalent to $4093 of 1967 dollars). In purchasing power, that income was the lowest since 1968, and 1977 income per farm and its purchasing power were probably slightly below 1976. However, both 1976 and 1977 income per farm, adjusted for inflation, are higher than the average of the 1960's ($3769), the 1950's ($3145) and the 1940's ($3327). The reason why income per farm is not as poor relative to the 1930's as is aggregate net farm income is that there are only about half as many farms today as in the 1930's and 1940's.

Another component of total income is income of the farm population from nonfarm sources. This would include nonfarm income of wives who have a job off the farm as well as part-time earnings or full-time earnings of operators who work off the farm. This nonfarm income has trended upward over time. It was approximately 35% of farm income in 1936 and was generally in the range of 25 to 40% of farm income until the mid 1960's. In 1967, for the first

time, nonfarm income of the farm population surpassed farm income of the farm population, and it has been higher in every year since then except 1973 and 1974. For 1976 and 1977 total personal income (1967 dollars) of the farm population from both farm and nonfarm sources was similar to the combined income for the 1960's rather than the 1930's. It might be pointed out, however, that the 1960's were also difficult times for farmers. Many farmers went out of business during those years.

Another source of information on the current farm situation is a farm record project maintained at Michigan State University -- the Telfarm farm business project. This project was started in the late 1920's and has been continued every year since. Cooperating farmers from all over the state of Michigan provide their records to Michigan State University. Included are most major types of farms.

In this record project one of the figures that is used to reflect farmer well being is a figure called labor income. To calculate labor income, one starts with net return to the farm after paying all cash expenses and depreciation, then subtracts an opportunity rate of return on the value of the farmer's investment, that is to say, what he might have earned on his net worth in a comparable quality of investment. What is left is the residual return to the operator's own labor and management. This is called labor income. Figures are not yet available for 1977, but looking at the period from 1972 through 1976, labor income went from $12,000 in 1972 to $31,000 in 1973, dropped back to $12,000 in 1974, then down to $1,300 in 1975 and to $112 in 1976. In the 1976 summary there were 653 complete Michigan farm records used to arrive at the $112 of labor income. That figure represents the whole year's earnings of labor and management of the farm operator. While 1977 data are not yet tabulated, we expect 1977 to be similar or perhaps even slightly lower than 1976. Obviously, a return of $112 for operator labor for one year is very low. Yet, the average for 1972 to 1976, even with the $112 averaged in, is $11,300. But given 1976 and 1977, compared to 1972 through 1974, one can understand farmers' concerns about low prices.

While net incomes are an important measure of earnings, they do not tell the whole story. Farmers have also benefited from capital gains from increased prices of farm land, and to a lesser extent, other assets. For example, over the five year period 1972-1976, the increase in value of real estate owned by farm operators was 52 percent larger than the net farm incomes of operators. That is to say, farm operators "paper value" of capital gains was $3 for every $2 of net farm income over the five year period.

FARM INCOME AND ITS PURCHASING POWER, SELECTED YEARS 1930-77

YEAR	TOTAL GROSS FARM INCOME	PRODUCTION EXPENSES	NET INCOME OF FARM OPERATORS	PURCHASING POWER - 1967 DOLLARS
		BILLIONS OF DOLLARS		
1936	9.95	5.64	4.31	11.05
1940	11.34	6.86	4.48	11.80
1945	25.37	13.06	12.31	21.60
1950	33.10	19.45	13.65	17.96
1955	33.48	22.17	11.31	13.46
1960	38.89	27.37	11.52	12.80
1965	46.55	33.65	12.90	13.58
1970	58.57	44.42	14.15	12.41
1972	70.98	52.32	18.66	15.18
1974	98.34	72.21	26.13	17.30
1976	101.75	81.74	20.01	11.37
1977ESI	?	?	19.5	10.5

These land value capital gains are a two edged blade, however. While they represent a delayed reward to the operator for his years of labor, and often substandard cash earnings, they also represent a higher cost for the young farmer trying to get established or for the expanding farmer who must buy the land at the higher price. Because of this capital gains aspect, there has often been truth to the description that farmers "live poor but die rich."

Land values have increased at record rates over the past few years. From 1971 to 1976, U.S. farm real estate values doubled. By 1977, farm real estate values nationwide were about 275% of their 1967 value. Much of this increase was a direct result of the improved grain prices which accompanied the major droughts in the early 1970's. Those higher commodity prices plus encouragement from Washington for increased production to feed a hungry world led directly to expanded demand for farm land and increasing land prices. Now with the bumper crops of 1976 and 1977, stocks of grains have been replenished and grain prices have fallen. Farmers who bought that high priced farmland and expensive, large scale machinery on credit expecting to pay for it with the inflated grain prices of 1973 to 1975 have now seen those grain prices drop substantially. Some of them may not be able to meet their debt service commitments. The more cautious farmer without a high debt commitment has more potential for belt tightening and living with the lower prices though his net income and cash returns are also well below the 1973-74 level. Also, the capital gains from increased land values could melt into capital losses if depressed grain prices continue. There are already scattered instances being reported where land is selling at prices below levels of 1976 and early 1977.

There is a Wide Range in Farmer Well Being

It is virtually impossible to characterize the average farmer. Farms vary by type, size, age of operator, quality of management, full-time - part-time and in many other ways. For example, while all farms in Telfarm (the farm record project at M.S.U.), averaged $11,290 of labor income for 1972 to 1976, some farm types did substantially better, others poorer. Swine farm operators averaged $30,100 labor income over this 5 year period. Potato farms averaged $30,134. Saginaw Valley cash crop farms averaged $24,000 for the 5 years. At a more moderate level, poultry farms averaged $11,800 of labor income, dairy, $8,400, tree fruit, $8,000, and cash grain $7,800. At the low end were cattle feeding operators who averaged $4,760 and beef cow operators who were $7,200 short of earning any labor income for their year's labor.

Obviously, all farmers are not in a uniform financial position. To get some feel for different areas of the state and which farmers might be most seriously affected, we surveyed by telephone approximately 18 farm lending organizations from all parts of Michigan. We asked their evaluation of the financial problems of their farm customers. They indicated that, in general, farmers were meeting loan commitments on time and were in a generally sound financial position. Their customers were disappointed in prices, yes, but hardly facing bankruptcy.

These lenders did mention a few individual problems. For example, some farmers who had lost herds from PBB still hadn't received settlements. Wet weather at harvesttime prevented some farmers from getting all of their edible beans and corn crops harvested. The beans are lost at this point though much of the corn can still be salvaged. Some operators overbought large expensive machinery items and now, with a reduced income from lower prices, are having problems meeting the payments. In one case a young man who started two years ago with little equity ran into serious drought in his first year and poor prices in 1977. He's probably out of the farming business. Others, often young, who bought too much machinery or too much high priced land, whose reach was too great, are being shifted to the Farmers Home Administration where additional credit can be made available to them and where they will also get some added farm management supervision.

But the response from these lenders was clear. The farmer who has been farming for several years, who has built up considerable equity, and who has not overexpanded in the past two or three years, is still in a very sound financial position. We did find some variation by type of farming area. Where wheat and corn were prime cash crops there seemed to be more problems than in other areas where cropping patterns were more diverse or where corn was grown primarily to feed livestock.

Lenders were also uniform, however, in saying that two more years of farm commodity prices like 1977 would be very serious and a number of their farm customers would, by that time, be in very serious financial difficulty. Also, a few lenders indicated that there would be some farmers going out of business in their areas this spring; but it was their impression that these would be primarily older farmers who might have considered retiring within the last few years and will do so now, or part-time farmers who feel the earnings are simply not adequate compensation for their efforts.

If Farmers Earn Less and Groceries Cost More, Who's Getting Rich?

Because farm prices have dropped and grocery prices have

risen, both consumers and farmers tend to focus on the middleman as the cause. (Perhaps surprisingly, consumers don't usually blame farmers for high grocery prices). But is the middleman making excessive profits? Food processing and marketing costs have generally been rising faster than farm prices have been declining, and therefore retail prices are pushed up. It's estimated that in 1977 consumers spent $241 billion dollars on food and beverages for consumption. Of this amount, $180 billion dollars were for U.S. farm originated food products, with the balance in alcoholic beverages, fish and imports such as coffee, cocoa, sugar, etc.

The farm value of this $180 billion dollars was $56 billion dollars. The remaining $124 billion dollars, the difference between consumer expenditures and the farm value, is the marketing bill. The marketing bill includes costs and profits involved in processing, manufacturing, storage, transportation, distribution and away-from-home preparation, incurred between the farmer and the consumer. A percentage breakdown shows processors and manufacturers share was 29% of the $124 billion dollar figure. Inter city truck and rail transportation was 8%. Food wholesaling 15%, grocery store retailing 24% and restaurants 22%.

In 1977, corporate profits after taxes for all food marketing firms were $5 billion dollars, 4% of the marketing bill. That leaves $119 billion dollars of marketing costs. Important cost categories were labor, $58 billion dollars, packaging materials, $16 billion dollars, transportation, $10 billion dollars, business taxes and energy $9 billion dollars. The labor costs in marketing farm products have passed the farm value of the raw product for the first time.

To twist a phrase, then, in search of the "culprit" for high food prices and low farm prices, "we have met the enemy and he is ours -- ourselves", that is. The major part of the grocery bill goes to pay the labor of the many people who work in the food system. That cost is more than the raw product itself. Other costs go to pay for other resources, transportation, energy, and other expenses of getting that food from farmer to consumer.

What the farmer is probably attempting to say is that his costs of production have also been increasing and that he needs some way of passing along those costs to consumers rather than having no market power to influence his own returns.

PARITY FOR AGRICULTURE--

WHAT IS PARITY?

John Ferris

Department of Agricultural Economics
Michigan State University

Stated in the simplest terms, parity prices for farm products are levels designed to provide the same purchasing power as in the base years of 1910-14. In the original parity formula developed back in the 1930s, the computation was straightforward and easily understood. An Index of Prices Paid by Farmers was constructed with 1910-14 as the base. This period was selected because it was determined to be one of a reasonable and stable relationship between prices received and paid by farmers. It was not wartime nor depression. Since farmers were in a difficult income situation in the 1920s and 1930s, policymakers were looking for a yardstick to use in developing price supports for agricultural products.

By computing (1) an Index of Prices Paid by Farmers with 1910-14 = 100 and (2) the average prices received by farmers for major products in 1910-14, the policymakers of the 1930s were equipped to calculate parity prices. The formula could be explained as follows: If prices paid by farmers doubled, that is the index of prices paid by farmers reached 200, and if wheat prices averaged $1 in 1910-14, then the parity price of wheat would be calculated to be $2. The computation is simply:

200% x $1 = $2.

Several changes were later made in the formula. For one, taxes, interest and wage rates were added to the Index of Prices Paid by Farmers. The official title is now "Prices Paid by Farmers for Commodities and Services, Interest, Taxes, and Wage Rates" and is often labeled the "Parity Index." The changes in the types and combinations of goods and services purchased by farmers have required periodic revision in the weighting pattern. Expenditure surveys at four different times have provided the information for calculating these weights.

The dramatic developments in the structure of agriculture and technology that followed World War II rendered a formula based on 1910-14 somewhat obsolete. For one, the formula did not take into account improved technology. Also because of the differential impact of technology and structure on farm enterprises, the formula favored some commodities and discriminated against others. For these reasons, a "modernized" parity formula was introduced in the early 1950s. This is the version currently in use. The formula is as follows:

Parity price of a given product

= [(Average price of given product in last 10 years)

÷ (Average Index of Prices Received by Farmers in last 10 years)]

x Parity Index.

For example, the parity price on corn for December 1977 was $3.47 per bushel. This was calculated as follows. The 120 month, January 1967-December 1976 average price received by farmers for corn was $1.81 per bushel. The 120 month, January 1967-December 1976 Average Index of Prices Received by Farmers was 360 (1910-14 = 100). Dividing $1.81 by 360 percent or 3.60 gives $0.503 per bushel. This is termed the "Adjusted Base Price" which is then multiplied by the Parity Index for December 1977--689 (1910-14 = 100).

$.503 x 6.89 = $3.47.

In essence, the modernized parity formula makes some allowance for changes in the price relationships among farm products. It does not, however, adjust for overall improved efficiency in agriculture.

If corn prices had increased by the same percent between 1910-14 and 1967-76 as did the Index of Prices Received by Farmers (for all products), the modernized parity formula would give the same parity price for corn as did the old formula. Because of the fact that corn prices increased less than other farm prices (perhaps an indication of more efficiency in production), the parity price under the modernized formula is somewhat less than under the old. For products on which prices increased more than the average between 1910-14 and 1967-76, parity prices under the modernized formula are greater than under the old.

Table 1 indicates the parity prices for major commodities for December 1976, November 1977 and December 1977. Also shown are farm prices for those months as a percent of parity. Note that most prices are well below parity levels.

Several criticisms have been leveled at the parity concept such as in a recent publication of the U.S. Department of Agriculture.1/

> Criticism of parity price has focused on three points in addition to general criticism of the parity ratio. First, there is no logical economic rationale for maintaining price relationships (from a particular base period) at a constant level over time. Such an action inhibits market change because of the interaction of technology with supply and demand.... Artificial price supports may retard adjustment in resource allocation because artificially higher prices will hold resources that would otherwise have been bid away by other uses. In fact, holding price relationships constant will maintain resource allocation within the agricultural sector, ceteris paribus. The "new formula" parity price was, in part, directed at this problem. As mentioned, the new formula uses a 10-year average of prices received, whereas the old formula used, for most commodities, the average price received for the base period (1910-14). ...the new formula parity price is only partially effective because commodities with price support or acreage control programs have never been allowed to move to their natural supply-demand equilibrium, and they will never do so as long as Government programs affect prices.

1/ Holland, Forrest, "The Concept and Use of Parity in Agricultural Price and Income Policy," Agricultural-Food Policy Review, ERS, U.S. Department of Agriculture, January 1977, p. 60.

Table 1. U.S. Parity Prices for Selected Farm Products and Average Prices Received as Percentage of Parity Prices Based on Data for December 1977, with Comparisons[a/]

COMMODITY AND UNIT		ADJUSTED BASE PRICES	PARITY PRICES BASED ON DATA FOR			AVERAGE PRICES AS PERCENTAGE OF PARITY PRICES		
			DEC 1976	NOV 1977	DEC 1977	DEC 1976	NOV 1977	DEC 1977
BASIC COMMODITIES:								
WHEAT, PER BU.	DOL.	.733	4.89	5.04	5.05	49	49	49
RICE, PER CWT.	"	2.03	13.60	13.90	14.00	48	73	77
CORN, PER BU.	"	.503	3.28	3.46	3.47	68	54	57
COTTON, PER LB.								
AMERICAN UPLAND	CT.	12.20	79.40	83.80	84.10	79	61	58
EXTRA LONG STAPLE	"	18.7	118.00	128.00	129.00			
PEANUTS, PER LB.	"	4.17	27.5	28.6	28.7	73	71	71
DESIGNATED NONBASIC COMMODITIES:								
ALL MILK, SOLD TO PLANTS, PER CWT.	"	1.88	12.20	12.90	13.00	76	75	75
WOOL								
WOOL, PER LB.	CT.	19.9	138.0	137.0	137.0	50	52	53
OTHER NONBASIC COMMODITIES:								
BARLEY, PER BU.	DOL.	.436	2.81	3.00	3.00	74	61	59
COTTONSEED, PER TON	"	20.70	138.0	142.0	143.0	75	50	47
DRY EDIBLE BEANS, PER CWT.	"	3.89	25.6	26.7	26.8	57	90	85
FLAXSEED, PER BU.	"	1.25	8.01	8.59	8.61	87	45	50
OATS, PER BU.	"	.253	1.60	1.74	1.74	94	63	65
POTATOES, PER CWT.	"	.839	5.61	5.76	5.78	56	56	55
RYE, PER BU.	"	.406	2.54	2.79	2.80			
SORGHUM GRAIN, PER CWT.	"	.842	5.49	5.78	5.80	64	52	54
SOYBEANS, PER BU.	"	1.11	7.28	7.63	7.65	90	74	74
SWEETPOTATOES, PER CWT.	"	2.03	13.30	13.90	14.00	60	68	81
APPLES, FOR FRESH USE, PER LB.	CT.	2.39	16.0	16.4	16.5	71	76	76
CITRUS (EQUIV. ON-TREE), PER BOX:								
GRAPEFRUIT	DOL.	.464	3.14	3.19	3.20	45	54	58
LEMONS	"	.894	6.29	6.14	6.16	14	31	20
LIMES	"	1.30	8.34	8.93	8.96			
ORANGES	"	.483	3.34	3.32	3.33	36	129	111
TANGERINES	"	.831	5.40	5.71	5.73	54	90	89
TEMPLES	"	.517	3.55	3.55	3.56			
BEEF CATTLE, PER CWT.	"	8.50	57.30	58.40	58.60	57	59	61
CALVES, PER CWT.	"	9.92	67.50	68.20	68.30	49	54	55
HOGS, PER CWT.	"	8.08	52.60	55.50	55.70	69	68	75
LAMBS, PER CWT.	"	9.03	58.50	62.00	62.20	76	84	90
SHEEP, PER CWT.	"	2.53	16.50	17.40	17.40	79	80	83
EGG, PER DOZ.	CT.	11.8	78.8	81.1	81.3	77	60	57
TURKEYS, LIVE, PER LB.	"	7.17	48.3	49.3	49.4	69	78	82

[a/] Crop Reporting Board, Agricultural Prices, U.S. Department of Agriculture, December 30, 1977.

Second, some parity prices may be self-escalating. Recall that the parity price for a particular commodity is computed by dividing the 10-year average price by the 10-year average of the Index of Prices Received. The result is multiplied by the Index of Prices Paid. If the price of any farm commodity in the Prices Paid Index increases, its parity price will tend to increase because the index will increase. For example, corn is included in the Index of Prices Paid as a production expense (as feed), and is also included as a basic commodity with a parity price in the Index. Thus, if the corn price increases, the parity price will increase for two reasons; the 10-year average price received will go up and the Index of Prices Paid will rise because corn is one of its components. Assuming the price of corn were to be supported at 90 percent of parity, for example, the cycle would feed upon itself and the corn parity price would continue to increase year by year.2/

Third, parity prices may not reflect inflation, especially across sectors. The Index of Prices Paid and the Index of Prices Received conceptually refer to an "average" farmer who produces all agricultural products included in the second index and consumes all items in the first index. Suppose that the inflation rate in the midwestern corn-producing areas is lower than the national average. In general, this disparity will cause the Prices Received Index to increase more rapidly than would the 10-year average price of corn. Thus, with other factors constant, the corn parity price would not adjust to inflation at the same rate as would the parity prices of commodities produced outside the Midwest because the Prices Received Index is increasing at a faster rate than the average corn price. If the Midwest's inflation rate were higher, the opposite behavior would occur.

Because of these problems, alternatives have been proposed as measures of farmers' well-being, such as the use of income or returns. Efforts have been directed also toward more refined measures of production costs. It should be emphasized that parity prices and parity income are two different concepts.

The advantage of the parity price formula is that it is much easier to compute than would be a parity income formula. While we can establish some targets for returns to labor, capital and management for farmers based on opportunities in alternative employment, estimating what prices would be needed to achieve these objectives for various types of farmers is a complex process. Some attempts to compute parity income have been abandoned. One effort currently underway in the U.S. Department of Agriculture is to calculate enterprise costs of production for those commodities being directly supported by government programs.

In general, prices needed to cover production costs would be less than 100 percent of parity. For example, nonland costs in corn production are in the neighborhood of $1.50 per bushel. Adding $1 to cover land costs would result in

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2/ Note that feed, feeder livestock and seed, all farm derived inputs, represented 25.3 percent of the Parity Index with weights based on data for 1971-73.

total unit costs of around $2.50 per bushel. This is a very rough figure and individual farmers will have costs much less and others much more. But few farmers would have costs as high as the parity price of $3.47 per bushel. The reason unit costs are less than full parity is that farmers are much more efficient today than they were in 1910-14.

Use of the parity formula was largely ignored in the Agriculture and Consumer Protection Act of 1973 and again in the Food and Agriculture Act of 1977. The target prices on crops in the 1977 Act were established using production cost data and are to be adjusted based on changes in variable costs. The parity formula was retained, however, in calculating support prices on milk which were set at 80 percent of parity for 1978-79 and thereafter at 75-90 percent.

In spite of its deficiencies, the parity price concept has remained a powerful tool in farm legislation for many years. The U.S. Department of Agriculture continues to calculate parity prices each month.[3/] In addition to the parity prices, the Parity Index and an Index of Prices Received by Farmers are also calculated. This Index of Prices Received is divided by the Parity Index to calculate the "Parity Ratio."

In December 1977, the Index of Prices Received by Farmers was 453 (1910-14 = 100). The Parity Index, that is the Index of Prices Paid by Farmers, was 689 (1910-14 = 100). This means that prices received had increased 4.5 times the level in 1910-14 while prices paid by farmers increased 6.9 times. The Parity Ratio was calculated to be 66 percent as follows:

$$453 \div 689 = 66\%.$$

The U.S. Department of Agriculture also calculates an "Adjusted Parity Ratio" to account for direct payments to farmers. Since these amounts were relatively minor during the past year, the Adjusted Parity Ratio was very close to the Parity Ratio.

The implication of the Parity Ratio at 66 percent in December 1977 is that to achieve 100 percent of parity, the general level of farm prices would have to increase by about 50 percent, i.e.,

$$100\% \div 66\% = 152\%.$$

What impact would 100 percent of parity have on farm income? The immediate effect would be substantial. If farm sales could be maintained at the 1977 level, gross farm income would be up by 50 percent and production expenses which account for 80 percent of gross income would rise by 20 percent reflecting higher prices on feed, feeder livestock and seed. These higher input prices would elevate parity prices even more. If this secondary effect were ignored, 100 percent parity prices would result in a tripling of net farm income. Of course,

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[3/] To be placed on the mailing list for Agricultural Prices, write to:

Prices and Labor Branch
Economics, Statistics and Cooperative Service
Room 0259
U.S. Department of Agriculture
Washington, D.C. 20250

sales could not be maintained at these higher prices so the longer-term effect of parity prices on farm incomes would be much less than indicated.

Because the 1910-14 era is such an ancient base period, far beyond the memories of most people today, the U.S. Department of Agriculture also publishes the same indices of prices received and paid by farmers and the parity ratio using 1967 as a base period. As a matter of fact, these indices are given more publicity than those based upon 1910-14. In reality, the indices are the same; just the base period is different.

The relationship between prices received and paid by farmers in recent years can be clearly seen in Figure 1. Prices received rose sharply in 1973 and have moved irregularly lower since. Prices paid have continued upward. The concern farmers have about this cost-price squeeze is understandable.

By December 1977, the Index of Prices Received by Farmers was 181 and the Index of Prices Paid, Interest, Taxes and Farm Wage Rates was 203 with 1967 = 100. The Parity Ratio using this base was 89, i.e.,

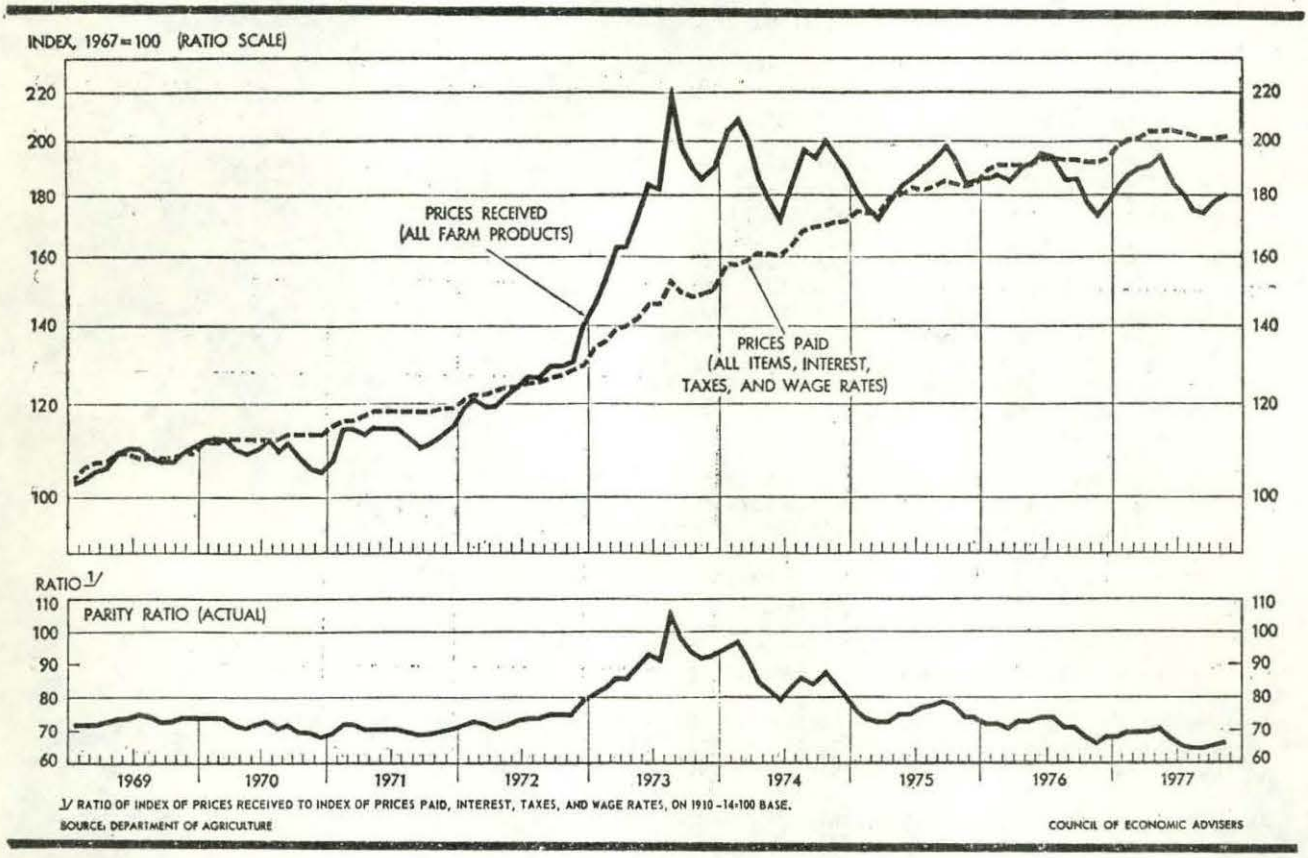
$$181 \div 203 = 89\%.$$

This means that the terms of trade in agriculture were lower in December 1977 than in 1967. To bring price relationships to 100 percent of parity with 1967, an overall rise in farm prices of 12 percent would be required, i.e.,

$$100 \div 89 = 112\%.$$

Achieving 100 percent of parity using the 1967 base is plausible. Achieving 100 percent of parity on the 1910-14 base would be very difficult economically and politically. In the past, price supports have been set at levels below 100 percent of parity--typically 65-90 percent of parity. Farm prices have normally remained well below full parity. Only once in recent history did farm prices reach 100 percent of parity (1910-14 base) and that was for just one month--August 1973. This can be seen in the bottom section of Figure 1. For a number of reasons, it would appear that efforts to calculate enterprise and total farm production costs would provide more realistic and equitable guidelines for programs designed to help farmers obtain parity income.

Figure 1. Prices Received and Paid by Farmers (1967 = 100) and the Parity Ratio (1910-14 = 100)



APPENDIX

PARITY PRICES

Parity prices are computed under the provisions of Title III, Subtitle A, Section 301 (a) of the Agricultural Adjustment Act of 1938 as amended by the Agricultural Acts of 1948, 1949, 1954, and 1956. Parity prices are published monthly in AGRICULTURAL PRICES for most agricultural commodities. The major provisions of the amended Act relating to the calculation of parity prices are as follows:

> "(1) (A) The 'parity price' for any agricultural commodity, as of any date, shall be determined by multiplying the adjusted base price of such commodity as of such date by the parity index as of such date.
>
> "(B) The 'adjusted base-price' of any agricultural commodity, as of any date, shall be (i) the average of the prices received by farmers for such commodity, at such time as the Secretary may select during each year of the ten-year period ending on the 31st of December last before such date, or during each marketing season beginning in such period if the Secretary determines use of a calendar year basis to be impracticable, divided by (ii) the ratio of the general level of prices received by farmers for agricultural commodities during such period to the general level of prices received by farmers for agricultural commodities during the period January 1910 to December 1914, inclusive. As used in this subparagraph, the term 'prices' shall include wartime subsidy payments made to producers under programs designed to maintain maximum prices established under the Emergency Price Control Act of 1942.
>
> "(C) The 'parity index', as of any date, shall be the ratio of (i) the general level of prices for articles and services that farmers buy, wages paid hired farm labor, interest on farm indetedness secured by farm real estate, and taxes on farm real estate, for the calendar month ending last before such date to (ii) the general level of such prices, wages, rates, and taxes during the period January 1910 to December 1914, inclusive.
>
> "(D) The prices and indices provided for herein, and the data used in computing them shall be determined by the Secretary, whose determination shall be final.

Section 301 (a) (1) (f) outlines authority for the Secretary of Agriculture to make special adjustments in the method of computing parity prices for particular commodities if the method outlined in the Act results in parity prices seriously out of line with those of other commodities.

The parity prices shown in this report are based on the provisions of the amended Act. Briefly, the actual method of computation is as follows:

a. The average of prices received by farmers for individual commodities for the 10 preceding years is calculated (for 1977 this is the 1967-76 average). An allowance for unredeemed loans and other supplemental payments resulting from price support operations such as the value of marketing certificates for wheat and support payments for feed grains is included for those commodities for which applicable.

b. This 10-year average is divided by the average of the Index of Prices Received by Farmers for the same 10 preceding calendar years adjusted to include an a allowance for unredeemed loans and other supplemental price support operations, including the value of marketing certificates and support payments, to give an "adjusted base price".

c. Parity prices are computed by multiplying the "adjusted base prices" by the current Parity Index (the Index of Prices Paid by Farmers, including Interest, Taxes, and Wage Rates, with 1910-14=100).

Parity prices are calculated in terms of prices received by farmers in the local markets in which they ordinarily sell. This means that parity prices apply to the average of all classes and grades of the commodity as sold by all farmers in the United States, except as otherwise specified. Fruits and vegetables for fresh use and for processing are usually considered as separate commodities, and parity prices for fresh and processing categories are calculated for many of the crops. The Agricultural Marketing Agreement Act of 1937 provided for parity prices in certain areas for certain commodities covered by a marketing agreement or order program. Under present legislation, U. S. parity prices with appropriate adjustments where needed may be used for the purpose of this Act.

Where necessary in connection with a particular program, average or normal differentials for different varieties, classes, or grades of a commodity and average or normal spreads between different markets, methods of sale, or locations are calculated and applied to the national average support level or to the parity price. Differentials may also be established for seasonal differences, especially where there is a reasonably regular and well-defined seasonal movement. Such spreads or differentials, of course, need adjusting or recalculating from time to time due to changes in methods of processing, in marketing and transportation costs, and in the distribution of supplies relative to demand.

Beginning with 1964, season average prices for the processed portion of deciduous fruit and vegetables are estimated as equivalent returns at the processing plant door. This results in little or no change in the price level for commidities in most States. Most notable exceptions are deciduous fruits and vegetables processed in California where the former price level was the first delivery point, and some vegetables processed in Texas.

THE PARITY RATIO

The Parity Ratio (the Index of Prices Received by Farmers for the products they sell divided by the Parity Index (1910-14=100) provides an indication of the per unit purchasing power of farm commodities generally in terms of the goods and services currently bought by farmers, in relation to purchasing power of farm products in the 1910-14 base period. Thus, a Parity Ratio greater than 100 indicates that the average per unit purchasing power of all farm products is higher than in 1910-14.

The Parity Ratio is a measure of price relationships; not a measure of farm income, of farmers' total purchasing power, or of farmers' welfare. The latter depends upon a number of factors other than price relationships, such as changes in production efficiency and technology, quantities of farm products sold, and supplementary income, including that from off-farm jobs and federal farm programs.

An adjusted parity ratio is computed and published which incorporates and reflects supplementary income from federal farm programs. A "Preliminary Adjusted Parity Ratio reflecting Government payments" based on the forecast of direct Government payments for the year is published each month in AGRICULTURAL PRICES.

THE INDEX OF PRICES PAID BY FARMERS, INCLUDING INTEREST, TAXES, AND FARM WAGE RATES 1/

One of the important indicators of changing economic conditions affecting Amercian agriculture is the Index of Prices Paid by Farmers, including Interest, Taxes, and Farm Wage Rates--commonly known as the Parity Index. This index measures the average change in prices paid for commodities and services commonly bought by farm families.

The Parity Index is made up of 5 major components. In terms of farm expenditures, the two most important components are the index of prices paid for commodities used in farm production and the commodities used in family living represented by the Bureau of Labor Statistics Consumer Price Index (CPI). These two indexes comprise the Index of Prices Paid by Farmers for Goods and Services. The remaining three components of the Parity Index are: (1) Interest charges per acre on mortgage indebtedness secured by farm real estate; (2) Taxes payable per acre on farm real estate; and (3) Wage rates paid to hired farm labor.

The farm Production Index is divided into 12 group indexes -- feed, feeder livestock, seed, fertilizer, agricultural chemicals, fuels and energy, farm and motor supplies, autos and trucks, tractors and self-propelled machinery, other machinery, building and fencing materials, and farm services and cash rent. Each group represents an important class of farm expenditure and provides the basis for comparing price changes for the various groups of commodities and services that farmers buy. As of June 15, 1977, the farm production component of the Parity Index included 179 different commodity price series.

Source of Data and Method of Computation

Price data used in the computation of the various indexes are collected largely by mail from stores serving rural areas. The U. S. commodity prices are computed by weighting State or region estimates of average prices by the estimated quantities of products purchased by farmers in each State or region. U. S. average prices are then combined into the group indexes, using as weights the estimated quantities of commodities purchased by farmers based on a 1971-73 surveys of farmers' expenditures. Official data of the Agricultural Research Service and the Agricultural Marketing Service supplemented the survey indications.

Production group indexes are combined into the production index, using percentage weights representing the estimated proportion of expenditures for each commodity group. These were derived primarily from the 1971-73 Expenditure Surveys. The production index and the CPI are in turn combined into the all-commodity index of prices paid, using weights representing the proportionate expenditures for these two components. In like manner, all commodities, interest, tax, and wage rate components are weighted, on the basis of relative expenditures, to obtain the Parity Index.

1/ AGRICULTURAL PRICES, AUGUST 1977 CROP REPORTING BOARD, SRS, USDA

Over the years, there have been substantial changes in the commodity consists of goods and services purchased by farmers which necessitated both periodic revision in the weighting pattern and shifts in commodity coverage. From 1910 to March 1935 estimated purchases by farmers during 1924-29 were the basis for weights. For the period March 1935 to September 1952 the basis for weights was estimated purchases by farmers during 1937-41. For the period September 1952-January 1965 the basis for weights was the 1955 Farm Production Expenditure Surveys. For the period starting in January of 1965, weights were based on the 1971-73 Expenditure Surveys.

The indexes are first computed on a 1971-73 base and then converted to the 1910-14 base by linking them to the 1910-14 index as of January 1965. To facilitate comparisons with other major indexes on a 1967=100 base, the indexes are computed as a percent of the 1967 average by dividing each index on the 1910-14 base by its respective 1967 average.

Use of the Indexes

The Prices Paid Indexes are widely used as measures of change for prices of commodities and services bought by farmers. The CPI component measures the average change in prices paid for consumer goods on a nationwide basis. Similarly, the production component measures the average change in prices paid by farmers for goods and services used in farm production. The interest, tax, and wage rate components are a measure of average change in amount paid by farmers. The Parity Index--Index of Prices Paid by farmers, Including Interest, Taxes, and Farm Wage Rates--provides a comprehensive measure of changes in prices and cost rates paid by farmers. It is used in computing Parity prices for agricultural products. The legal basis and methods used in computing Parity prices are described in the July 1975 issue of AGRICULTURAL PRICES, Supplement No. 6 pages 3-9.

PARITY INDEXES: RELATIVE IMPORTANCE OF COMPONENT INDEXES,
1971-73 AND JUNE 15, 1977 1/

COMMODITY GROUP	RELATIVE IMPORTANCE	
	1971-73 3/	JUNE 15, 1977
	PERCENT	
CONSUMER PRICE INDEX (CPI) 2/	30.4	28.0
PRODUCTION	57.6	59.4
FEED	11.8	12.2
FEEDER LIVESTOCK	11.7	7.4
SEED	1.8	2.1
FERTILIZER	4.2	5.1
AGR. CHEMICALS	1.7	1.6
FUELS & ENGERY	3.5	4.2
FARM & MOTOR SUP.	2.2	2.0
AUTOS & TRUCKS	2.5	2.8
TRACTORS & S-P MACH.	4.5	5.4
OTHER MACHINERY	2.7	3.3
BLDG. & FENCING	3.6	4.0
FARM SERV. & CASH RENT	7.4	9.3
TOTAL COMMODITIES	88.0	87.4
INTEREST	4.0	5.0
TAXES	2.8	2.4
FARM WAGE RATES	5.2	5.2
COMMODITIES, INTEREST, TAXES AND WAGE RATES	100.0	100.0

1/ DATA SHOWN INDICATE THE CONTRIBUTION OF EACH COMPONENT TO THE DETERMINATION OF THE PRICES PAID INDEXES REFLECTING THE RELATIVE IMPORTANCE OF THE PRODUCT OF PERCENTAGE WEIGHTS TIMES COMPONENT PRICE INDEXES.
2/ BEGINNING IN JAN 1977, THE BUREAU OF LABOR STATISTICS (BLS) CONSUMER PRICE INDEX (CPI) WAS USED IN PLACE OF THE USDA-SRS, FAMILY LIVING INDEX.
3/ SAME AS INDEX WEIGHTS.

RELATIVE IMPORTANCE OF ITEMS FOR INDEXES OF PRICES PAID BY FARMERS INCLUDING INTEREST, TAXES AND WAGE RATES, JUNE 15, 1977

GROUP AND COMMODITY	RELATIVE IMPORTANCE	GROUP AND COMMODITY	RELATIVE IMPORTANCE
	PERCENT		PERCENT
CONSUMER PRICE INDEX (C.P.I.)	28.0	PRODUCTION (CONTINUED)	
PRODUCTION	59.4		
FEED	12.2		
		FERTILIZER (CONTINUED)	
CORN	2.28	10-10-10	.60
OATS	.19	10-20-10	.18
BARLEY	.10	16-20-0	.09
SORGHUM	.09	18-46-0	.62
ALFALFA HAY, BALED	.75		
		AMMONIUM NITRATE	.66
OTHER HAY, BALED	.53	ANHYDROUS AMMONIA	.61
LAYING MASH	1.11	NITROGEN SOLUTION, 32%	.54
CHICK STARTER	.21	ORDINARY SUPERPHOSPHATE, 20%	.05
BROILER GROWER	1.35	CONCENTRATED SUPERPHOSPHATE, 46%	.16
TURKEY GROWER	.09	MURIATE OF POTASH, 60%	.25
		LIMESTONE	.19
DAIRY FEED, 14%	.47		
DAIRY FEED, 16%	1.29		
DAIRY FEED, 32%	.33	AGRICULTURAL CHEMICALS	1.6
HOG FEED, 14-18%	.82	ATRAZINE	.41
HOG FEED, 38-42%	1.02	2-4-D	.57
BEEF FEED, 32-36%	1.12	TOXAPHENE	.13
		CARBARYL	.09
SOYBEAN MEAL, 44%	.24	PARATHION	.22
COTTONSEED MEAL, 41%	.07		
MIDDLINGS	.01	METHYL PARATHION	.05
CORN MEAL	1/	ZINEB	.15
STOCK SALT	.07		
LIQUID MOLASSES	.07		
		FUELS AND ENERGY	4.2
		GASOLINE, TANK TRUCK	1.75
FEEDER LIVESTOCK	7.4	GASOLINE, FILLING STATION	.69
		DIESEL FUEL	.75
DAIRY COWS	.83	L.P. GAS	.18
CATTLE AND CALVES	5.26	ELECTRICITY	.83
HOGS	.66		
BABY CHICKS	.65		
		FARM AND MOTOR SUPPLIES	2.0
		NAIL HAMMERS	.02
SEED	2.1	HOES	.01
CORN, HYBRID	.95	PITCHFORKS	.01
WHEAT	.13	SHOVELS	.01
OATS	.08	HAND SPRAYER	.01
BARLEY	.05		
GRAIN SORGHUM	.08	END WRENCH, ADJ.	.06
		CHAIN SAW, GAS	.07
SOYBEANS	.31	ELECTRIC DRILL	.03
POTATOES, IRISH	.07	ACETYLENE WELDER	.03
COTTONSEED	.07	MOTOR OIL, NON-DETERGENT	.05
PEANUTS	.04		
RICE	.02	MOTOR OIL, HEAVY DUTY	.08
		MOTOR OIL, ALL WEATHER	.07
ALFALFA CERTIFIED	.15	GREASE, 35 LB. PAIL	.09
RED CLOVER	.05	ANTI-FREEZE	.06
RYEGRASS, ANNUAL	.07	AUTO TIRES, BIAS-BELTED	.04
TALL FESCUE	.03		
SUDAN GRASS	.03	AUTO TIRES, RADIAL	.04
		TRUCK TIRES, 6-PLY	.11
		TRUCK TIRES, 10-PLY	.08
FERTILIZER	5.1	TRACTOR TIRES	.25
0-20-20	.14	STORAGE BATTERIES, 12 VOLT:	
5-10-10	.19	CPR-220-310 AMPS.	.03
5-10-15	.24	CPR-315-500 AMPS.	.09
6-24-24	.46	SPARK PLUGS	.04
8-32-16	.15	OIL FILTER	.08

1/ LESS THAN .005.

RELATIVE IMPORTANCE OF ITEMS FOR INDEXES OF PRICES PAID BY FARMERS INCLUDING INTEREST, TAXES AND WAGE RATES, JUNE 15, 1977

GROUP AND COMMODITY	RELATIVE IMPORTANCE	GROUP AND COMMODITY	RELATIVE IMPORTANCE
	PERCENT		PERCENT
PRODUCTION (CONTINUED)		PRODUCTION (CONTINUED)	
FARM AND MOTOR SUPPLIES, CONT.		TRACTORS & SELF PROPEL. MACHINERY, CONT.	
WATER HEATER	.02	COMBINES, SMALL	.34
MILK PAILS	.03	COMBINES, MEDIUM	.71
BALER TWINE, 40 LB. BALE	.14	COMBINES, LARGE	.32
ROPE, MANILLA	.02	COMBINE - CORN HEAD	.27
		WINDROWER	.17
BARBED WIRE, 4 PT.	.05	COTTON PICKER	.25
LUBRICATION	.03		
RELINING BRAKES	.08	OTHER FARM MACHINERY	3.3
		PLOWS, MOLDBOARD, 1-WAY, 3 BTM	.22
MAGAZINES	.04	PLOWS, MOLDBOARD, 1-WAY, 5 BTM	.09
FRUIT BOX, SHOOK	.12	DISK, TANDEM, DRAWN, 18-20 FT.	.18
LUG BOX	.06	DISK, TANDEM, DRAWN, 12-14 FT.	.14
VEGETABLE CRATE, SHOOK	.04	HOE, ROTARY, 13-15 FT.	.05
OPEN MESH BAGS	.05		
		FIELD CULTIVATORS, 10-12 FT.	.04
		FIELD CULTIVATORS, 17-19 FT.	.04
BUILDING AND FENCING	4.0	ROW CROP CULTIVATOR, 4-ROW	.09
WOOD POST	.13	ROW-CROP CULTIVATOR, 6-ROW	.03
ROUGH BOARDS	.13	CORN PLANTER, 4-ROW, W/FERT.	.31
BARBED WIRE, 2 POINT	.06		
BARBED WIRE, 4 POINT	.08		
FIELD AND STOCK FENCE	.10	GRAIN DRILLS, PLAIN	.04
STEEL FENCE POSTS	.15	GRAIN DRILLS, W/FERT. ATTACH.	.02
STAPLES, FENCE	.06	GRAIN DRILLS, PRESS	.04
ELECTRIC FENCE CHARGER	.02	MOWERS, 7-FT.	.19
PORTLAND CEMENT	.37	MOWER CONDITIONER	.11
CONCRETE BLOCKS	.40		
		PICK-UP BALERS	.19
PINE, 2x4, STANDARD & BETTER	.22	FORAGE HARVESTERS, PTO, W/PICK-UP ATTACH.	.20
FIR, 2x4, STANDARD & BETTER	.28	CORN PICKER-HUSKER	.15
DRESSED BOARDS, NO. 2 & BETTER	.07	FARM WAGONS, RUNNING GEAR	.28
PLYWOOD, INTERIOR	.19	FARM WAGONS, GRAVITY UNLOAD	.10
ROOFING, GALVANIZED STEEL	1.16		
NAILS, 8D	.13	FEED GRINDER-MIXER	.14
		MANURE SPREADERS	.07
EXTERIOR HOUSE PAINT	.09	POWER SPRAYERS, BOOM TYPE	.10
SHINGLES, ASPHALT	.10	GRAIN ELEVATORS, AUGER TYPE	.18
IRON PIPE, GALV. 1 1/4 IN.	.13	MANURE LOADERS, TRACTOR	.07
INSULATING SHEATHING, 1/2 IN.	.03	MILK COOLERS	.23
DEEP WELL JET, 1/2 HP., W/TANK	.12		
		FARM SERVICES AND CASH RENT	9.3
AUTOS AND TRUCKS	2.8		
AUTOS, NEW, INTERMEDIATE	.13	CASH RENT PER ACRE	3.00
AUTOS, NEW, LOW PRICED STANDARD	.26	CUSTOM TILLAGE PER ACRE	.10
AUTOS, NEW, MED. PRICED STANDARD	.09	CUSTOM PLANTING	.11
AUTOS, USED	.26	CUSTOM HARVESTING CORN PER ACRE	.54
PICKUPS, NEW, 3/4 TON	1.26	CUSTOM HARVESTING SMALL GRAIN PER ACRE	.81
		CUSTOM HAYING PER ACRE	.67
PICKUPS, USED, 3/4 TON	.56	TRANSPORTATION	1.18
TRUCKS, NEW, 1 1/2-2 TONS	.12	PIECE RATE LABOR	.95
TRUCKS, USED, 1 1/2-2 TONS	.13	TELEPHONE MONTHLY BILL	.45
		INSURANCE	1.49
TRACTORS & SELF-PROPEL. MACHINERY	5.4		
WHEEL TRACTORS, 30-39 PTO HP.	.66	INTEREST	5.0
WHEEL TRACTORS, 50-59 PTO HP.	.60		
WHEEL TRACTORS, 90-99 PTO HP.	1.76	TAXES	2.4
WHEEL TRACTORS, 110-129 PTO HP.	.33		
		WAGE RATES	5.2
		TOTAL	100.0

COST OF PRODUCING CORN[1/]

by

Roy Black

Department of Agricultural Economics
Michigan State University

1.0. Introduction

Secretary of Agriculture Bergland argued, in testimony before the House Agricultural Committee, "Any business must show a reasonable return on investment, labor and management, to stay in business. There must be a margin of profit over and above all of these combined production costs." Similar statements have been made by growers and by the leadership of the national farm organizations. This paper addresses the issues: (1) What is *cost* and (2) What is the *cost of growing corn*? While parity is defined in the context of all commodities, corn is discussed since it provides a common, easily understood benchmark. Too, corn is one of the commodities in a cost-price squeeze.

2.0. What is Cost?

Members of the accounting and economic professions are far from being in unanimous agreement about a definition of cost, particularly during periods of inflation. Most, however, find categorization of costs into five groups meaningful: (1) inputs that are "used up" in the production process such as fertilizer, seed, herbicides, pesticides, and interest of these operating costs; (2) depreciable capital assets such as machinery and buildings; (3) family and operating labor; (4) management; and (5) land.

2.1. Single period inputs

Cost establishment for seed and fertilizer is easy; it's just what you have paid for the input. In addition, the interest of these costs until harvest of the crop must be considered. If the grain is not sold at harvest, the interest on the value of the grain at harvest and the cost of storage are included.

2.2. Multiple period inputs--depreciable assets

Depreciable capital presents a more difficult problem. The investment cost for assets that last over several years such as tractors, combines, and dryers must be converted into an *annual use cost*. The question is asked, "How much would it cost--per year--to keep this piece of equipment for the foreseeable future, including an allowance for its replacement?" The annual use cost is typically taken as depreciation plus interest; Black and Fox (1977), Castle and Becker (1962), and Hopkins et al. (1973) discuss these calculations in more detail.

[1/] John Brake, John Ferris, Myron Kelsey, Harlan Hughes, and Gerald Schwab, Agricultural Economics, Michigan State University, participated in the discussion of the underlying concepts and the cost estimates presented in this paper.

Inflation presents an additional conceptual problem. Should cost be charged on book value or on replacement value? Table 1 depicts, for a 600 acre Michigan corn/soybean farm, the impact of machinery price inflation on machinery investment and annual use cost per acre--replacement value basis. The 1977 costs were $42.13/acre as contrasted to $21.38/acre in 1971. The average age of a farmer's machinery complement is an important determinant of the estimated machinery cost per acre when conventional income tax accounting methods are used. Ultimately, depreciable capital assets must be replaced; and, they must be replaced on a new cost basis.

Table 1. Impact of Inflation on Machinery Investment and Annual Use Cost/Acre[a/]

Year	Machinery Price Index	Machinery Investment/ Acre, $	Annual Cost/ Acre, $[b/]
1971	100	126	$21.38
1972	105	132	22.45
1973	112	141	23.95
1974	123	155	26.30
1975	159	200	34.00
1976	177	223	37.85
1977	197	248	42.13

[a/] Based on a 600 acre corn, soybean farm in southeastern Michigan. Includes dryer and storage bins. See Lehrmann (1976), Lehrmann, Black, Connor (1976).

[b/] Assumes average life of 8 years with 20% trade-in value (as % of new cost) and 10% opportunity cost on capital. See Black and Fox (1977) for assumptions used to calculate annual use cost as a % of investment cost.

2.3. Labor

Pricing hired labor is straightforward; it's wages plus fringe benefits, social security, and workman's compensation. Pricing operator and family labor is more difficult since labor is often a "residual claimant." Indeed, farmers have historically budgeted low operator and family labor wages and, in turn, capitalized those low returns into abnormally high land prices.

What is a "reasonable" wage rate to charge? Often, family and operator labor is priced at what it could earn in an alternative occupation with a

similar skill level. Since there is a hired farm labor market, the prevailing wage is often used to price the "nonmanagerial" component of family and operator labor.

In labor markets where there are few barriers to entry, there may be a variation in wage rates across occupations.[2/] Some individuals will take less per hour, when given the alternative, to have the job of their choice. If too many people like a certain occupation, wage rates will have to be bid up in competing occupations to get an adequate sized labor force. This may be true of agriculture; the birth rate of agricultural families exceeds job opportunities. Thus, there is a tendency for agricultural wages to be relatively lower since sons like to follow their father's footsteps.

A rate of $4.50/hour was budgeted for family and operator labor in the MSU budgets that follow; that is in excess of the average farm wage rate. The agricultural labor wage rate was used in budgets mandated by the "1973 Agriculture and Consumer Protection Act" by USDA economists (USDA, 1976). Additionally, USDA economists included a "management charge" for "overall planning assistance, but not ordinary day to day management decision" comparable to that charged by farm managers working for banks, insurance companies, and farm management companies in the budgets mandated by the 1973 Act. The resulting total labor "cost," labor plus management, was similar to that of the MSU budgets. However, the management charge has been dropped from the interpretation of the 1977 Act.

2.4. Land

Land, among all inputs, is perhaps the most difficult to arrive at a consensus for its "annual use cost." Additionally, the fundamental nature of land as the most important factor in food production generates discussions that do not commonly occur when discussing other capital assets such as corporate stocks and bonds.[3/] Land, to further complicate issues, is viewed as a source of income by some farmers but as a cost--rent--by others.

Cash rental of land provides a convenient starting point. Assume you are a "potential" landlord. How do you assess the maximum amount you would be willing to pay for a parcel of land that you will, in turn, cash rent to someone else? Your approach probably will not differ from someone contemplating an investment in the stock market; you will look at dividends (cash rent) and growth in value (capital gains). If no capital gains are expected, you will want (say) an 8 percent return on your investment; that is $120/acre on $1500/acre land plus property taxes. But, some investors will trade-off dividends for growth; low dividends may be acceptable if there are prospects for substantial capital gains.

[2/] Historically, entry has been reduced in some occupations, with the result that wage rates are higher than they would have been otherwise. For example, Appalachian coal miners' wages/hour improved significantly under John L. Lewis; however, employment was reduced.

[3/] Growers and consumers should not forget that land currently producing 90 bushels of corn per acre was producing only 35 bushels 40 years ago. Clearly, improved varieties, fertilizers, herbicides, tiling, irrigation and the knowledge to manage complex agricultural systems is important too.

Capital gains in farmland were substantial in the 1970s; across the U.S. farm real estate values increased 228 percent from 1971 to 1977, an average of over 25 percent per year.[4/] But, lets examine what has happened to earnings, Table 2. Initially, prices received increased much faster than prices paid; land prices began to spiral. But, by 1977 the index of prices received had fallen from a peak of 281 in 1974 to 185; the index of prices paid was up to 180. Real net returns to land were similar to 1971. Clearly, *either* land prices must fall *or* the prices for feed grains and wheat must increase. Something must "give." Alternatively, farmers could be expecting significant capital gains in the 1980s; but, you cannot make payments with "paper" capital gains.

Table 2. Indexes of Prices Paid, Prices Received, and Real Estate Values (1971 = 100)--Corn[a/]

Year	Index of Prices Paid for nonland inputs[b/]	Index of Prices Received	Index of Real Estate Prices
1971	100	100	100
1972	107	145	108
1973	129	236	123
1974	147	281	153
1975	161	235	175
1976	171	215	198
1977[c/]	180	185	228

[a/] Source: Agricultural Prices, U.S. Department of Agriculture, various issues.

[b/] Includes labor.

[c/] Estimate.

3.0. Nonland Cost of Growing and Harvesting Corn in Michigan

Table 3 depicts an estimate of the nonland cost of growing and harvesting, but not storing, corn in Michigan in 1978 for 80, 100 and 120 bushels per acre yields. The 100 to 120 bushel yields are realized on the more productive soils in the Thumb and in southeastern Michigan, as well as scattered areas throughout

[4/] Surveys indicate up to 90 percent of the land purchases during the period were made by farmers, primarily for nearby properties. Capital gains were real for farmers who retired.

the state. In contrast, a substantial portion of the state's soils are in the 80 bushel yield range.

Let's examine the structure of cost in more detail. Expenditures for seeds, fertilizer, herbicides, and supplies are readily apparent. Treatment of labor and machinery, as noted earlier, is a more difficult task and one confounded by impacts of size of operation. As an approximation, the field operations typical in corn production were enumerated ranging from plowing to drying. These operations were priced at custom rates with upward adjustments when it appeared that the custom rates were inadequate to sustain reasonable returns to capital and to labor by custom operators. Thus, the cost estimates should reflect an adequate return on investment for the machinery complement as well as a $4.50/hour return to labor. In addition, $6 was added per acre for management and supervisory labor. As a check, the custom rate plus management and supervisory labor expenditures were compared to the labor and machinery totals for the 400 to 600 acre cash grain farms cooperating in the Michigan State University record-keeping project. They are consistent; they would be slightly lower for the farms with more than 800 acres. Additionally, these expenditures were compared against record data from Illinois on cash grain farms.

The cost per bushel ranges from $1.66 for the 80 bushel budget to $1.39 at 120 bushels. That is a 7¢ change in cost per bushel for each 10 bushels per acre change in yield. Thus, the nonland costs--before adjusting for economies of size--for prudently managed operations will vary within the state from $1.80/bushel on sandy soils that average 60 bushels per acre to $1.30/bushel on the most productive clay, loam soils.

Cost of production is influenced by size of operation as well as soil type. Figure 1 depicts, for operations typical of those found in southeastern Michigan, the impact of size on nonland costs. For the smallest group, averaging 226 acres, the expenditure for labor averaged $.43/bushel. However, for the 500 to 649 acre group, the expenditure falls to $.21/bushel; it falls only slightly thereafter. Similarly, cost for seed, fertilizer, herbicides, and interest on operating capital fell from $1.07/bushel for the smallest size group to around $.90/bushel for the 500 to 649 acre size group; they remained constant for the next two size groups but were slightly larger for farms larger than 950 acres. Building and machinery costs were slightly higher for the smallest size group, but were largely independent of size thereafter, running around $.36/bushel. The farm cost structure used in making the estimates typically included storage structures; thus, the costs are slightly higher than those depicted in Table 3. It appears that there are substantial size economies up to 400 acres with slight additional economies in the 400 to 600 acre range. On the average, there appears to be few economies for growing larger.

Table 4 depicts yield per acre vs. size of operation. There is a tendency for operations under 500 acres to have lower yields. The data were from soils with comparable productivity ratings and thus do not reflect differences in soil types. Also, farmers over 650 acres sold their grain, on the average, for $.02 more per bushel than the smaller farmers.

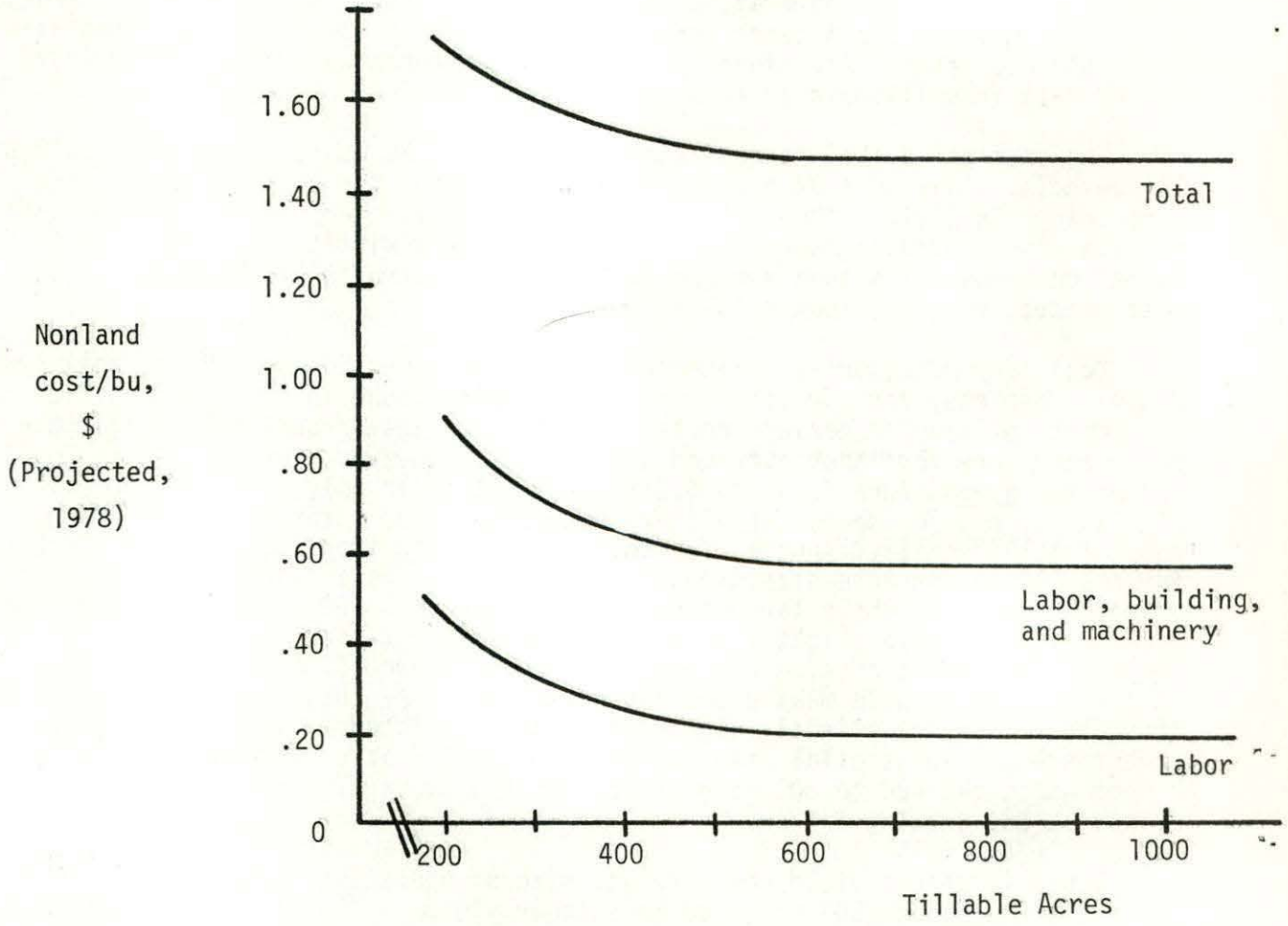


Figure 1. Nonland cost/bushel vs. tillable acreage

Table 3. 1978 Nonland Cost of Growing and Harvesting Corn

Item	Explanation	Price Per Unit	Yield Level			Your Budget
			80 bu	100 bu	120 bu	
Seed	19-20-22,000	$45/80,000	$10.70	$11.30	$12.40	
Fertilizer						
Nitrogen	100, 125, 150	$.115/lb	11.50	14.40	17.30	
Phosphate	25, 50, 60 lb	$.16/lb	4.00	8.00	9.60	
Potash	50, 60, 100 lb	$.08/lb	4.00	4.80	8.00	
Lime	200, 250, 300 lb	$.005/lb	1.00	1.30	1.50	
Herbicides[a/]						
Aatrex	1.5 lb	$2.00/lb	3.00	3.00	3.00	
Lasso	2 qt.	$3.75/qt	7.50	7.50	7.50	
Insecticides[b/]			7.00	7.00	7.00	
Supplies, Miscellaneous[c/]			3.50	3.50	3.50	
Interest on Operating Capital	Average, 7 mo.	9%/year	5.10	5.81	6.51	
Field Operations[d/]						
Plow	1 time		8.50	8.50	8.50	
Spreading Fertilizer	1 time		2.00	2.00	2.00	
Knifing NH_3	1 time		2.75	3.00	3.25	
Fitting	1 time		4.40	4.40	4.40	
Planting	1 time		6.00	6.00	6.00	
Cultivation	1 time		3.20	3.20	3.20	
Spraying	1 time		2.50	2.50	2.50	
Harvesting	1 time		16.00	17.50	19.00	
Trucking[e/]		$.07/bu	5.60	7.00	8.40	
Drying[f/]		$.023/point, dry bu basis	18.40	23.00	27.60	
Management and supervisory labor			6.00	6.00	6.00	
Total Nonland Cost/Acre			$132.65	$149.71	$167.10	
Nonland Cost/Bushel			$ 1.66	$ 1.50	$ 1.39	

[a/] Alternative herbicide programs are available. A concrete example is used for illustrative purposes.

[b/] Assumes control for corn rootworm.

[c/] Soil testing, records, etc.

[d/] Custom rates were used since they should approximate the total cost of doing field work including labor, depreciation, interest on investment, and fuel and repairs (Schwab and Gruenewald, 1978). Upward adjustments were made when the rates were less than independent estimates of the custom rate required to "break-even."

[e/] Haul less than 25 miles.

[f/] 25% to 15%.

Table 4. Farm Size vs. Yield Per Acre, Constant Land Quality[a/]

Measure	Size Group, Acres						
	180-259	260-339	339-499	500-649	650-799	800-949	950+
Average tillable acreage	226	300	423	560	717	862	1220
Yield, bushels/acre	103.5	106.3	109.1	110.0	111.9	110.1	112.8

[a/] Source: Mueller and Hinton (1975). Sample contained 407 "pure" grain farms.

4.0. Average Cost of Growing Corn, U.S.

Congress directed the Secretary of Agriculture, under the 1973 Agriculture and Protection Act, to study the cost of producing major agricultural commodities and to annually update these estimates. The Economic Research Service conducted a nationwide survey with the cooperation of the Statistical Reporting Service in early 1975 to obtain data with which to estimate production costs. Table 5 depicts these estimates of all nonland costs *except* management. They are approximately $.10 lower than the estimates presented in Table 3; most of the difference is in the labor charge.

Table 5. Estimated National Average Nonland Cost of Growing Corn, USDA[a/]

Year	Cost/acre, $	Yield/planted acre, bu	Cost/bu, $
1974	101.94	69.6	1.46
1975	122.37	85.7	1.43
1976	128.70	87.1	1.48
1977[b/]	133.56	90.7	1.48
1978[c/]	140.56	83.3-93.3	1.45-1.62

[a/] Source: Krenz et al. (1976) and private communication.

[b/] Preliminary and subject to revision.

[c/] USDA estimate.

Estimates were obtained on the acquisition of costs and on the current costs of land. USDA analysts projected for 1977, based on acquisition values, that the average land costs would be $.70/bushel. In contrast, on a current basis, it would have been $1.04/bushel. Average *total* cost for 1977 was $2.18 on an acquisition cost basis and $2.50 on a current value basis with using the interest rate on Federal Land Bank mortgage loans. *No allowance was made*, as an income credit, for capital gain earnings as a result of land value increases.

5.0. Regional Variation

Table 6 depicts estimated costs for 1976 for various producing regions in the United States. The estimates differ slightly from those appearing in Table 4 as a result of data series revisions; however, they are adequate to illustrate the point. While the average nonland cost for the U.S. was in the $1.40 to $1.56 range, the range was from $1.33 to $1.47 in the Corn Belt up to $1.99 to $2.33 in the southeast. There is substantial variation in nonland cost per bushel within a region as a result of soil productivity groups and size of unit and across regions.

6.0. Conclusions

The nonland cost of production in Michigan is $1.50/bushel excluding storage costs, for a prudently managed operation on a soil type that has the potential for averaging 100 bushels per acre. The nonland cost will increase by 7¢/bushel for each 10 bushel decrease in yield. Farms in the 200 to 300 tillable acres range will, on the average, have nonland costs $.20/bushel above those more than 600 acres.

The level at which the corn loan and target prices are set at will not sustain current agricultural land prices.

Table 6. Estimated Average Nonland Cost of Growing Corn in 1976, USDA[a/]

	Northeast	Lake States and Corn Belt	Northern Regions	Southeast	Southwest	United States
Yield/acre, bu	77.7 - 87.7	92.6 - 102.6	77.8 - 87.8	58.1 - 68.1	93.0 - 103.0	86.3 - 96.2
Cost/bushel, $						
Variable	1.38 - 1.56	1.00 - 1.10	.91 - 1.03	1.57 - 1.84	1.41 - 1.55	1.03 - 1.15
Machinery ownership	.44 - .50	.24 - .27	.34 - .38	.30 - .35	.27 - .30	.27 - .30
General farm overhead	.11 - .12	.09 - .10	.10 - .11	.12 - .14	.15 - .17	.10 - .11
Total of above	1.93 - 2.18	1.33 - 1.47	1.35 - 1.52	1.99 - 2.33	1.83 - 2.02	1.40 - 1.56

[a/] Source: Krenze et al. (1976).

7.0. Postscript

The nonland costs of growing and harvesting corn outlined in Table 3 do not include the cost of storage. Thus, in making comparisons with the 1977 Food and Agricultural Act nonrecourse loan program or with the season average corn price, allowance must be made for the cost of storage. There is substantial variation in storage cost across sizes of storage unit, between commercial and farm storage, and as a function of experience and skill in managing storage operations. Commercial rates have ranged from 2¢/bu/month to as much as 4¢/bu/month in Michigan in 1977-78, depending on site and scarcity of storage.

The cost of storage must be subtracted from gross returns when comparing returns under the 1977 Food and Agricultural Act. Table 7 illustrates, for land capable of averaging 100 bushels per acre, the net return to land under the set-aside program. The net is $27.90/acre. As discussed earlier, that is hardly adequate to support current land values. A farmer in a low equity position who has purchased a substantial fraction of his land recently will be unable to meet cash-flow commitments.

Table 7. Net Return to Land Under Set-Aside Program (100 bu/acre land)

Revenue:	
.9 acre x 100 bu x $2.00/bu	= $180.00/acre
.9 acre x 90 bu x $ .10/bu	8.10[a/]
TOTAL	$188.10
Nonland Cost:	
.9 acre x $150/acre	= $135.00/acre
.1 acre of cover crop x $45/acre	= 4.50
90 bu storage @ $.23/bu	= 20.70
TOTAL	$160.20
Net to land	$ 27.90

[a/] ASCS appears to be using "proven" yields below farm averages. Also, there is considerable variation in the ratio of "proven" to 3-year average yields across farms and counties.

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PARITY FOR AGRICULTURE

Impact on the Domestic Economy

John Ferris

Department of Agricultural Economics
Michigan State University

The American Agriculture Movement has focused on the goal of farm prices at 100 percent of parity. Since the Parity Ratio (Prices Received by Farmers ÷ Prices Paid) based on 1910-14 has been about 66 percent, this would mean an increase of about 50 percent in farm prices. One can only conjecture what impact this might have on food prices, food consumption, farm income, U.S. Treasury costs, exports, and so forth. The answer also depends on the time frame--next year, next 3 years, next 10 years, etc.

Making certain assumptions, we can get some idea of the possible magnitude of some of these effects. First on food prices. American farmers generally receive about 40 percent of the retail cost of farm produced food. If you raise farm prices 50 percent, this would push retail food prices up roughly 20 percent. This is assuming that the margin between farm and retail prices does not change.

Nearly $1 out of every $3 Americans spend on food is away from home--in restaurants, fast-food places, and institutions. Farmers receive only about 20 percent of these dollars because more services are required than on food bought at the local supermarket. Parity prices to farmers would increase the cost of eating out only by about 12-13 percent.

In addition to farm produced foods, we also consume certain foods not directly related to U.S. agriculture. Fish and imported foods, including coffee, tea, cocoa and about half of the sugar consumed in this country, represent a small proportion of all food consumed (15 percent). At times, however, price changes on these products do make a difference, as was the case on sugar in 1974-75 and coffee in 1976-77. Coffee price increases alone accounted for half of the rise in retail food prices in 1977. If parity prices were achieved on U.S. produced farm foods, there would be some impact on prices of fish and imported foods although to a much smaller extent. Prices on sugar, which is also produced domestically, would rise in line with parity prices. A rough estimate is that retail prices on fish and imported foods as a group would increase about 15 percent.

Adding U.S. farm food consumed (at home and away) to fish and imported foods, we might calculate that the first round of consumer price increases on food would be about 16-17 percent if farmers received parity prices. In the Bureau of Labor Statistics' Consumer Price Index (CPI), food had a relative importance of 23.7 percent in December 1976 (latest available figure).[1/] A

[1/] The Bureau has revised their CPI and food prices will be less important. The revised series will be published beginning in February 1978.

16-17 percent rise in food prices would cause a 4 percent increase in the Consumer Price Index on all items.

Over time, the marketing margin on food between the farmer and the consumer has increased about in line with changes in the CPI. For each of the last 3 years, the farm-retail spread has been widening at nearly the same rate as general inflation. This is understandable since labor makes up nearly half (47 percent in 1976) of the cost, followed by packaging (13 percent), transportation (8 percent), corporate profits before taxes (7 percent), business taxes (4 percent), interest, repairs, etc. (4 percent), depreciation (3 percent), advertising (3 percent), rent (3 percent), and other (8 percent).

If the marketing margins were to be affected in a similar way in response to a 4 percent increase in the CPI, this would add another 2-3 percent to the price of food at home and away. After this effect is taken into account, the impact of parity farm prices on food prices would amount to nearly 20 percent.

Even the 20 percent increase in food prices does not represent the ultimate effect of parity farm prices. The impact of higher food prices on the CPI would be reflected in the Index of Prices Paid by Farmers (Parity Index). The CPI represents about 30 percent of the Parity Index. A 4-5 percent increase in the CPI caused by a 20 percent increase in food prices would raise the Parity Index by 1-2 percent. This in turn would increase parity prices and more inflation would filter through the system. Certain wage contracts, Social Security benefits and other sources of inflationary pressure are tied to the CPI and these too would eventually push up on the Parity Index.

Parity prices for agriculture would not affect all food items alike. This is because (1) the parity formula adjusts each product by its relationship with all farm prices over the last 10 years, (2) current prices may be abnormally high or low for some products, and (3) the share the farmer receives of the retail cost varies greatly from one product to another. Table 1 shows the market basket of farm goods for 1977 and the immediate effects on raising farm prices to December 1977 parity levels.

Note that the increase to parity levels would double the farm values of bakery and cereal products but would have a much less effect on fresh fruit, dairy products, and fats and oils. But even a doubling in wheat prices would only raise retail prices by about 13 percent since the farmers' share of the retail cost is quite low. The effect on retail prices ranges from a 48 percent increase in eggs to 7 percent on fresh fruits. Meat, an important part of the market basket, would increase in price by about 30 percent.

What would happen to food consumption if retail prices were to increase 20 percent? Probably not very much in total if the rise was spread over 2 or 3 years. Between 1972 and 1974 food prices increased 30 percent, but this had little effect on per capita consumption. An index of per capita consumption of total food computed by the USDA dropped only 1 percent in this period. Consumption of animal products dropped off somewhat more than for crop products but the changes were small and were probably related more to stages of livestock cycles than a major shift in consumption patterns.

Table 1. Market Basket of Farm Foods[a/]

Product Group	Farm Value			Farm-Retail Spread	Retail Cost			Farmer's Share	
	1977 $	Parity $	Change %	1977 $	1977 $	Parity $	Change %	1977 %	Parity %
Meat	313	481	+ 54	257	570	738	+ 30	55	65
Dairy	171	228	+ 33	169	340	397	+ 17	50	57
Poultry	41	59	+ 44	33	74	92	+ 24	55	64
Eggs	39	68	+ 75	21	60	89	+ 48	65	76
Bakery and cereal	39	80	+104	266	305	346	+ 13	13	23
Fresh fruits	26	32	+ 24	62	88	94	+ 7	30	34
Fresh vegetables	45	72	+ 59	91	136	163	+ 20	33	44
Processed fruits and vegetables	36	54	+ 50	162	198	216	+ 9	18	25
Fats and oils	29	39	+ 35	47	76	86	+ 13	38	45
Miscellaneous	12	18	+ 50	80	92	98	+ 6	13	18
TOTAL	751	1131	+ 51	1188	1939	2319	+ 20	39	49

[a/] Represents all food originating on U.S. farms sold in retail food stores. The market basket contains the average quantities puchased annually per household in 1960-61 for preparation at home by families of urban wage earners and clerical workers.

Source: U.S. Department of Agriculture

The major reasons consumers did not cut back food consumption very much were because (1) the demand for food in total is very inelastic to changes in prices, (2) consumer incomes accelerated upward in this period, and (3) food assistance programs (food stamps, child nutrition and food distribution) expanded rapidly.

We should recognize, however, that if food prices were to rise sharply without an accompanying increase in incomes and food assistance, there would be a noticeable shift away from animal protein to vegetable protein, from higher priced to lower priced foods. Some families were forced to make these adjustments in 1972-74. But as in the past, political pressure on the administration and Congress would encourage monetary and fiscal policies which would expand the money supply, push up on consumer incomes and thereby generate additional inflation. With parity farm prices tied to the CPI, the inflation would raise farm and food prices even further.

From 1972 to 1974, expenditures on food did increase relative to disposable income--from about 16 percent in 1972 to 17 percent in 1974. Since then this percentage did drop back slightly and is still low by historical standards--and is low among the nations of the world.

Disposable consumer incomes per capita are expected to increase by about 9 percent and the CPI about 6 percent in 1978. Assume that this happens and that the same rates of increase apply in 1979. If farm prices were raised to parity levels over the next 2 years, food prices would likely increase 30 percent because of the adjustment to parity and an increase in the Parity Index and in marketing costs. The share of disposable income spent on food would increase about 2 percentage points to around 19 percent. While this is a larger increase in a 2 year span than recorded since the end of World War II, it would still be less than the share was 20 years ago.

The conclusion is that an adjustment to parity farm prices over a 2-3 year period could be accommodated without requiring major cutbacks in food production for the domestic market. Import controls, however, would have to be imposed to keep farmers abroad from taking advantage of these higher prices. Exports, the outlet for nearly 20 percent of our farm products, could be adversely affected over time if parity prices were charged in international markets. Crop producers would see foreign markets shrink substantially when other nations such as Brazil expand their output.[2/]

There would be some adjustment problems domestically, also. Cotton prices would be moved upward by more than 70 percent to reach parity levels. This would encourage wholesale substitution of polyesters for cotton--not a desirable move in the current energy situation. Sugar prices would more than double whereas corn prices would increase about 75 percent. This would invite substitution of corn sweeteners for beet and cane sugar. Hog producers would probably fare very well at parity levels for hogs, corn and soybeans, but cattle feeders might be squeezed in paying parity prices for corn and calves.

[2/] Sorenson, V.L., "Parity for Agriculture--The Export Situation and Its Importance," Staff Paper 78-11, Department of Agricultural Economics, Michigan State University, January 1978.

The initial effect on net farm incomes would be dramatic. Income from marketings in U.S. agriculture was over $90 billion in 1977. Assuming no cut back in sales, a 50 percent increase in farm prices would add about $50 billion to gross farm income. Realized net farm income, at about $20 billion in 1977, would increase threefold to about $60 billion. Parity prices on feed, feeder livestock and seed would add $15 billion to production costs--which in reality is income to other farmers.

This, of course, overstates the effect on income because production would have to be reduced if parity prices were achieved in the marketplace. An alternative program could be one of deficiency payments with the $50 billion transferred directly from the U.S. Treasury. Market prices would continue to function and sales would not be affected. Controls would be necessary to keep production in line with demand whether parity prices are achieved through the marketplace or through government payments. A $50 billion transfer from the Treasury to farmers would not affect food prices directly but would be inflationary because it would likely be financed by an increase in the Federal deficit. This alternative would be difficult to accomplish politically although some use of direct payments might be given favorable consideration.

Probably the most damaging argument against the goal of parity prices is that the increased income generated would quickly be capitalized into higher land values. Inflation in farm real estate values accelerated sharply after farm incomes jumped in 1973. Farm land prices have more than doubled since 1972. Such inflation eventually adds to the Parity Index because real estate taxes are included in the computation. Current land owners would benefit from this windfall, but later on new owners could well be in the same difficult farmers are in today who purchased land recently.

Rather than parity prices, farmers should be focusing on parity income as an objective. Parity income means that returns to land, labor, capital, and management are comparable to what could be earned in other similar employment. In the long-run, parity income can only be achieved when farmers are not willing to take less. This means farmers need to know what their earnings and costs of production in farming really are and what could be earned elsewhere.

In conclusion, achieving parity farm prices in the domestic market appears to be feasible. We have experienced a 20-30 percent rise in food prices over a couple of years in the recent past--not without consumer protest--but people eventually adjusted to it. The percent of disposable income spent on food would rise but would remain under the 20 percent level, at least for a period. The drawback is that farmers would have considerable difficulty in mustering enough political support to accomplish this objective.

Parity prices charged in export markets would result in a decline in sales particularly after foreign producers have sufficient time to respond. The U.S. would be holding an umbrella over world markets that would encourage expanded production. Loss of export markets would damage our economy at a time when we desperately need to close our merchandize trade deficit and pay for foreign oil.

American farmers have contributed in a substantial way to the growth of our economy. Over time, they have done more to hold back on inflation than to add

to it. Farmers have increased their labor efficiency twice as rapidly as non-farm industries. They have become efficient enough to be very competitive on world markets. The system has worked well for the general economy but not always well for the farmers. Unless farm prices improve in the next year or so, many producers will be in a serious financial position. This is an appropriate time to bring this possibility to the attention of the public and begin a dialogue on needed action.

PARITY FOR AGRICULTURE

The Export Situation and its Importance

by

V. L. Sorenson

A. Role of World Markets for U.S. Agriculture

Both the quantity and value of U.S. agricultural exports have risen sharply over the past five years, growing more rapidly than total U.S. exports. This growth contrasts with a world-wide decline in agriculture's share of total exports. The favorable position of U.S. agriculture in recent years derives from:

--more competitive pricing of U.S. farm products starting in the mid-sixties (income payments and floating exchange rates instead of high loan rates and export subsidies);
--growth in developing country (LDC) populations and incomes creating a demand for imports rising more rapidly than their own food production;
--increased consumption of animal products in many developed countries and richer LDC's which stimulated demand for U.S. feedstuffs, and;
--the decision of the USSR to import grains to help support its expanding livestock industry.

The existence of underutilized agricultural resources enabled the U.S. to respond more quickly to these increases in demand than major competitors and to earn more than $20 billion of foreign exchange earnings each of the last three years, and approaching $24 billion in 1977. Thus, while the U.S. share of total world trade has gradually declined from 18 percent in 1951-55 to 12 percent in 1971-75, agricultural exports have risen from 12 to 16 percent of world agricultural exports during the same period. See Table 1. The continuance of this level of exports is not assured, however, since part of the increase is due to temporary factors, such as drought, which led some nations to make unusual imports. Meanwhile, many nations seek to expand their internal production and to protect high cost, inefficient agricultural producers against more efficient producers in the U.S. and other countries.

In recent years, more than 20 percent of U.S. farm production has been exported, compared with about 14 percent in the early 1960's. While the foreign market is more significant for crop production than for livestock products, exports are significant for a long list of commodities (Table 2). including:

--More than half of the production of wheat, soybeans and products, rice, dry edible peas, almonds, cattle hides, mink pelts, and hops;
--a third to half of the production of cotton, tobacco, prunes, and tallow;
--about a fourth of the grain sorghum, corn, lemons and limes, and dry edible beans;
--with more variation, 10 to 20 percent of variety meats, lard, rye, barley, nonfat dry milk, and fruits and vegetables in general, and;
--smaller amounts of dry whole milk, flaxseed, chickens and turkeys.

Table 1 U.S. market share of world total and agricultural exports, by five-year averages, 1950-76

	Total Exports			Agricultural Exports			Share Agriculture of Total trade in	
	World	U.S.	U.S. Share	World	U.S.	U.S. Share	World	U.S.
	-- Bil. U.S. Dollars --		Percent	-- Bil. U.S. Dollars --		----------	Percent	----------
1951-55 Ave.	84.82	15.20	17.9	26.80	3.30	12.3	31.6	21.7
1956-60 Ave.	113.32	19.06	16.8	31.62	4.26	13.4	27.9	22.3
1961-65 Ave.	157.52	23.76	15.1	38.67	5.64	14.6	24.5	23.7
1966-70 Ave.	248.00	35.05	14.1	47.60	6.54	13.7	19.2	18.7
1971-75 Ave.	610.75	73.22	12.0	96.74	15.73	16.3	15.8	21.5
1976	999.1	114.61	11.56	138.0est.	22.99	16.7	13.9	20.3

Source: Arthur Mackie, "World Economic Growth, and Demand for US Farm Products," World Economic Conditions in Relation to Agricultural Trade, WEC-12, August 1977.

Table 2 US agricultural exports of specified commodities as share of production based on quantity

Commodity	Unit	Share production exported -- year ending June 30				
		1972	1973	1974	1975	1976 1/
		-- Percent --				
Dry edible peas 2/	Cwt.	53	85	59	63	61
Almonds, shelled basis	Lb.	48	40	45	42	56
Wheat, incl. products equiv.	Bu.	39	77	67	58	55
Cattle hides, whole	No.	43	52	48	56	55
Mink pelts	Do.	50	40	43	48	52
Soybeans 3/	Bu.	52	56	47	49	51
Hops, including extract	Lb.	67	60	46	43	47
Dried prunes	Do.	32	48	29	28	47
Cotton	Bale	31	34	44	33	40
Tallow	Lb.	40	40	45	39	31
Sorghum grains	Bu.	12	24	26	30	31
Tobacco, farm sales weight	Lb.	37	36	42	34	30
Rice, rough	Cwt.	61	69	52	45	27
Corn, grain	Bu.	12	20	24	24	27
Raisins	Lb.	38	28	21	21	24
Lemons and limes	Do.	24	32	23	33	17
Dry edible beans	Cwt.	18	18	20	28	15
Variety meats	Lb.	10	11	12	12	13
Lard	Do.	9	8	10	9	10
Flaxseed	Bu.	10	63	4	3	7
Rye, grain	Do.	4	33	102	21	6
Barley, grain	Do.	10	15	20	13	6
Nonfat dry milk	Lb.	25	10	1	10	6
Dry whole milk, incl. whey	Do.	5	6	5	4	6

1/ Preliminary.
2/ Includes Austrian winter peas and lentils.
3/ Includes bean equivalent of soybean products for exports.

Source: ERS, FDCD

Not only are export markets vital to U.S. agriculture but also the export earnings are important to the U.S. economy in general. In addition, U.S. food supplies play a major role in the world economy, in recent years supplying about 16 percent of the value of agricultural commodities moving in world agricultural trade. The U.S. supplied up to 50 percent of the world grain exports, a third of the cotton, a fourth of the tobacco, most of the soybeans and a smaller 20-25 percent of all vegetable oil.

Exports under government programs have remained relatively constant at approximately $1 billion per year, hence have become a relatively small component of the total.

Among these products, grains have a particular importance to the importing countries. Imported foodgrains are a major means of sustaining growing populations in the developed nations, including the USSR and Eastern Europe, as economic growth and greater personal incomes lead consumers to upgrade their diets.

B. Policy Conflict

One of the long-standing conflicts that has existed in agricultural policy is that between international policy and domestic policy. Importers that maintain domestic prices above world levels use various forms of protection including tariffs, quotas, variable levies, and other devices to restrict imports of commodities. Exporters, on the other hand, use various forms of subsidies and state aids to place commodities on world markets. Present U.S. farm legislation with loan rates below target prices was designed to provide a measure of income protection for farmers while at the same time permitting market prices to reach a level that would not interfere with our ability to compete in world markets. Maintaining a competttive position in world markets is particularly important in the case of grains and oil-seeds where we are the world's major export supplier. This conflict is an important issue in deciding whether it is feasible to move to full parity price protection for agriculture. Some options exist, but major costs would be incurred.

C. Options for Moving to Parity in Agriculture

Option 1: Retain the loan rate at its present competitive world level and increase target prices to full parity with government payment of the difference.

This option would retain U.S. prices at world levels and would assure continued outlet for American farm products. It would, however, become very costly to government through greatly increased deficiency payments. Using round figures and assuming that this would require a deficiency payment of $1.50 per bushel on 6 billion bushels of corn, the total cost for corn alone would be $9 billion. The cost of a $2.00 deficiency payment on 2 billion bushels of wheat would be $4 billion. Full parity price on soybeans is $7.65 per bushel and with current market prices of $5.50 per bushel a deficiency payment of $3.6 billion would be required on total production of 1.7 billion bushels. Smaller payments would be required for other commodities.

A second kind of impact would occur in that prices at these levels almost certainly would call forth additional production in the United States which in turn would require instituting more stringent set-asides and possibly some revision of supply control policy.

Option 2: Raise target prices and loan rates to parity and subsidize exports.

This approach would substantially reduce government costs by transferring much of the cost into the domestic market through higher prices and ultimately to consumers. A subsidy of $1.50 a bushel on approximately 1.7 billion bushels of corn exports would total $2.5 billion. A subsidy of $2.00 per bushel on approximately one billion bushels of wheat would result in government costs of $2 billion. The export subsidy on soybeans would exceed $1 billion and some payments would be required on other commodities.

The implications of increased domestic prices would not be serious in the case of wheat for food in that the wheat component in the cost of a loaf of bread is relatively small. Feed costs to livestock and dairy producers on the other hand would increase substantially and require adjustment in those industries.

A third major implication of this approach relates to the U.S. effort currently underway to reduce trade barriers on agricultural commodities and further open world markets to U.S. exports. Raising domestic prices on U.S. farm products would require rigid import protection on our part and add the U.S. to the list of those countries that are heavily subsidizing exports in world markets. The United States has recently completed a trade agreement with Japan where, among other things, the Japanese agreed to substantially increase their imports of high quality American beef (by tenfold) and to increase imports of several other commodities. We are seeking increased access into the European economic community for a wide range of commodities as well as a number of other countries. If the United States adopts a protectionist policy in agriculture at this time these efforts would surely be contravened with long-run damage to U.S. agricultural export markets.

Option 3: Raise U.S. target and loan rates to parity level and permit the United States to become the residual supplier in world markets.

Because the United States is a major factor in world grain and oil-seed markets, this would tend to raise world price levels, probably substantially. Two affects would follow: 1) Consumption would be reduced in some countries, and 2) competing export suppliers would be stimulated to increase output to take advantage of higher prices. How much effect this would have is difficult to estimate in a precise way. In the case of wheat for food use, industrial countries probably would not cut back consumption very much, if at all, as a result of higher prices. Wheat is a very small cost component in diets and little change would occur. In the case of Communist countries and some less-developed countries some reduction in imports likely would occur. Many of these countries are in very tight foreign exchange position and are at present heavily dependent on credit to maintain their imports. They likely would be forced to reduce purchases of agricultural products.if prices rose substantially.

In the case of feed grains, the two biggest markets are West Europe and Japan and in both of these markets feed grain prices to end users are above U.S. parity at the present time and little demand effect would occur. In other areas such as East Europe and Russia and some less-developed countries that import feed grains import levels likely would decline.

In the case of soybeans, West European market price levels are at world prices and a considerable reduction in purchases could be expected at full parity levels.

Over time the most important change is that higher prices would stimulate increased production in competing export countries. Increased output of wheat for export could occur particularly in Argentina, Canada, and Australia. In the case of feed grains, these same countries plus Brazil and Thailand could become more important factors in the world market. For soybeans, Brazil has increased production rapidly and has moved from a negligible exporter in the late 1960's to a position where she now has about 30% of the market. Increased production of palm oil and other substitutes for the oil component of soybeans could also be expected.

D. Issues

Clearly the fact that U.S. agriculture is an international business raises some serious policy questions. Some of these are as follows:

1. Can the United States permit a diminishing role for U.S. agricultural products in international markets both from the viewpoint of maintaining strength in the agricultural industry and from a national interest point of view as reflected in balance of payments accounts?

2. What cost can the public accept in the form of deficiency payments or export subsidies in order to increase farm incomes and at the same time maintain our competitive position in world markets?

3. Can we operate a farm policy that leads to major international policy conflict that will contribute to increased levels of protection both in agriculture and in industry and lead to reduced overall international trade both in agricultural products and in industrial products?

4. Will farmers give up a measure of freedom and re-enter a partnership with government in determining what shall be produced?

5. What impact would higher prices have on land values and would substantially increased land prices be in the long-run interest of agriculture or the nation as a whole?

6. What kinds of marginal changes can be made to help alleviate the current stress situation in agriculture? This could involve increased emphasis on market expansion, larger set-asides, and possibly some incremental price changes, though the latter would require new legislation.

7. Can existing policies aimed at dealing with instability in agricultural markets be improved? Livestock producers have passed through a recent period of low income and economic stress. Currently, grain producers are in this situation. Eliminating this kind of variation is important and needs to be reflected both in our national level policies and efforts to deal with instability at the international level.

8. Can grain farmers effectively organize to protect their interests, either through the market or through the political process?

PARITY FOR AGRICULTURE

FEDERAL POLICY IN WHEAT, CORN AND SOYBEAN MARKETS

Ronald Cotterill

Department of Agricultural Economics
Michigan State University

INTRODUCTION

Farm prices were depressed during the early 1920s and the great depression as they are now. Responding to farmers' call for government action, Franklin D. Roosevelt and his New Dealers moved to shore up farm prices and income through the Triple A Programs of the 1930s. Since that time, federal regulation of agricultural markets has drawn its legitimacy from the general consensus that large swings in agricultural production and prices do more harm than good to our national economy. Farm policy is part of the broader demand that government set its policies to achieve full employment, stable prices, economic growth, and an equitable distribution of the resultant benefits.

Parity for agriculture is primarily concerned with the last of these goals. In its broadest and most fundamental sense, it translates to a demand that farmers not be disadvantaged to the benefit of other groups in American society. As such, it is a demand upon the economic system that is similar to those of industrial workers and corporate management for an equitable share of the income pie. Although income levels are more heavily affected by individual endeavor, human and physical capital inputs, and bargaining power, government policy can make a difference. Most observers agree that federal policy in agricultural markets has improved the income of farmers who remained in agriculture during the past 45 years.

This paper examines the agricultural policy that is now operating in the wheat, corn, and soybean markets. Oats, barley, and grain sorghum policies are similar to corn policy, therefore, they are not discussed. The current cash-flow problems of grain farmers suggest that parity does not have as high priority in administration thinking as other goals. The analysis of target price adjustments for wheat and corn in the final section of this paper also suggests this is true. The cost of production adjustment method used in the current farm program may be too weak to move target prices up during the 1978-1981 period.

WHEAT

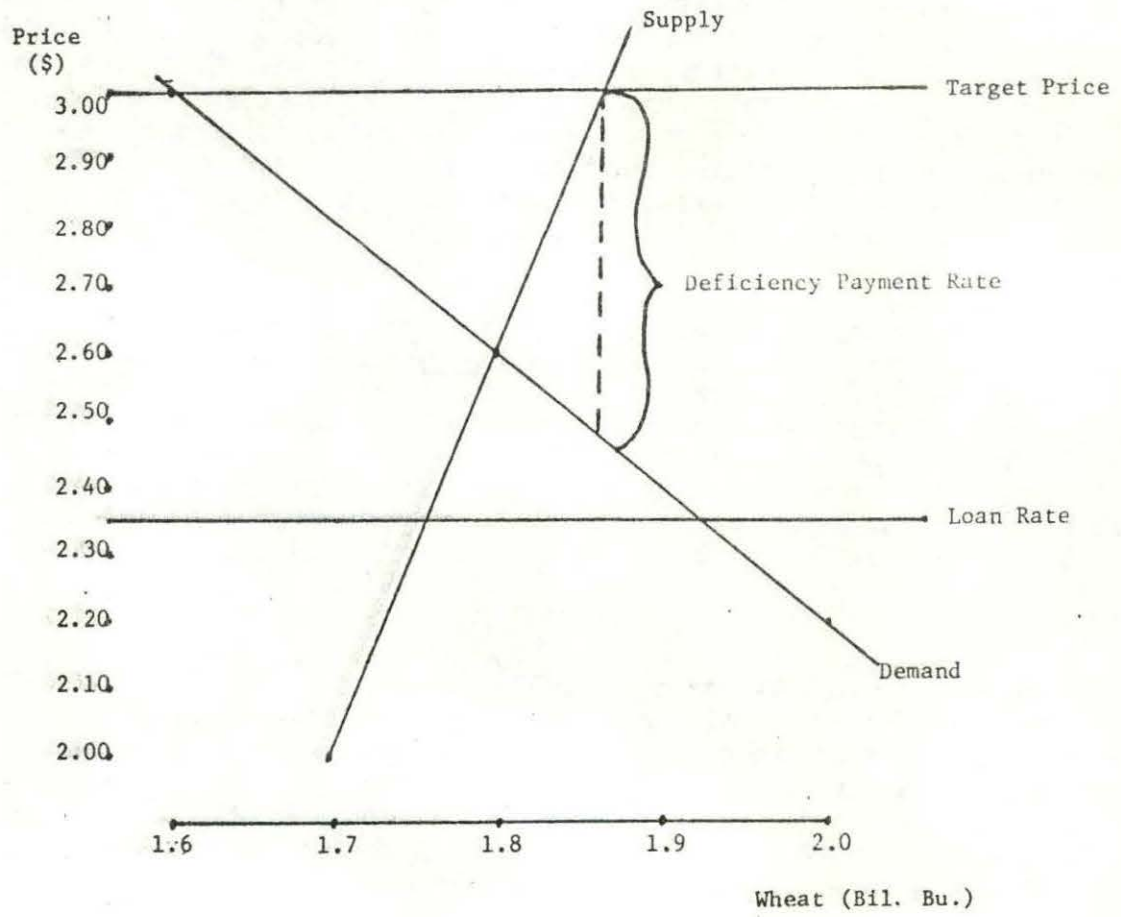
Wheat production in 1977 was 2,026 million bushels, slightly short of the previous year's record 2,142 million bushel crop. As a result of high production carry-over, stocks have expanded substantially and market price has declined. This year's ending stocks are predicted to equal 61 percent of annual utilization and the average market price will probably settle around $2.25/bu. For comparison, in 1975 ending stocks were 34.8 percent of utilization and average price was $3.55/bu. Clearly, supply has expanded more rapidly than demand.

Responding to excess supply, the government has called for a 20 percent reduction in 1978 wheat acreage. Under the 1977 Food and Agriculture Act, farmers are not paid for setting aside acres, however, farmers must comply to be eligible for deficiency payments, Commodity Credit Corporation (CCC) crop loans, and disaster payments. The astute farmer will comply with the federal set-asides only if the costs of reducing output are offset by program benefits.

Costs associated with compliance are seeding down a permanent soil-conserving cover crop on set-aside acres and the lost output from those acres. Benefits from deficiency payments depend upon the difference between the target price and the average market price during the first five months of the marketing year or the loan rate if the market price is below loan. The 1978 target price for wheat is $3.00/bu. if the harvest is greater than 1.8 billion bushels and $3.05 if smaller than 1.8 billion bushels. The loan rate is $2.35/bu. Thus, farmers may receive as much as 70¢/bu. from the government. If a farmer reduces wheat acreage 20 percent, he receives deficiency payment equal to the payment rate per bushel times his farm's ASCS established yield per acre times the number of acres harvested.

Although deficiency payments are disbursed directly to the farmer, it is important to understand that a portion of the government support is passed on to purchasers of wheat through lower prices and increased supplies. Figure 1 illustrates this:

Figure 1: An Illustration of the Target Price and Deficiency Payments Mechanism for 1978 Wheat.



Wheat growers receive $3.00/bu. for their 1.86 billion bushel harvest but purchasers pay only $2.47/bu. The difference is made up by the deficiency payment. With no government program, buyers pay the equilibrium price of $2.60/bu. or 13¢/bu. more and receive less wheat. If this cost saving is passed on to consumers, the program has a progressive impact on family welfare because lower food prices benefit low-income families more than high-income families.

Although the conversion of crops under loan into long-run reserves may enhance consumer welfare, commodity loans and disaster payments primarily benefit farmers. The disaster payment programs for prevented planting and low crop yield are insurance benefits. Their worth to individual farmers depends upon the amount of security desired and the probability that disaster will strike their cropping operations. Commodity loans become valuable if the market price falls below the $2.35/bu. loan rate by a margin sufficient to pay nine months storage. Placing wheat under loan removes it from the market and supports the market price. As of January 25, 650 million bushels of wheat were under loan to the CCC.

When CCC loans mature, farmers have the option of extending them and entering the farmer-owned wheat reserve by signing three- to five-year reseal agreements. Moreover, a recent ruling (February 6, 1978) by the Secretary of Agriculture allows farmers to place their crop directly into the reserves. Farmers will receive 25¢/bu. annually to defray storage costs, however, they cannot sell from reserves until the market price is 40 percent above the loan rate--$3.29/bu. If they sell at a lower price, they must repay all storage costs and interest in addition to loan principle. Similar penalties are extracted if the farmer does not sell before price moves above 175 percent of loan. These release rules are designed to allow current market price to rise above target but not to climb to the high levels experienced a few years ago.

Given these benefits and costs to compliance, USDA estimates as of January 1978 that enough farmers will comply to reduce wheat acreage by 12 percent this year. Production is estimated to decline 9 percent. Coupled with a moderate expansion in exports, this output would push price above the loan price and reduce ending stocks to 45.5 percent of utilization. It appears that wheat policy is moving prices and stocks in directions that will benefit farmers. Whether it is adequate depends, at the very least, upon the costs of production. USDA estimates the average cost of production excluding land costs and return to management to be $2.23/bu. in 1977. For producers demanding 100 percent parity price in 1978, $5.04/bu., the current policy is inadequate.

CORN

The 1977 corn harvest was a record 6,367 million bushels and it piled into bins on top of a 879 million bushel carry-over from the large 1976 crop. As a result, this year's ending stocks are projected to be 19.3 percent of utilization, up from 6.9 percent in 1975. The U.S. farm price will be around $2.10/bu., down from $2.54/bu. in 1975. Supply has grown more rapidly than demand.

Government programs for corn producers offer benefits similar to those discussed for wheat. Participants become eligible for deficiency payments, CCC crop loans, and disaster payments. They also have access to a farmer-owned feed grain reserve by signing three- to five-year reseal agreements upon maturity of CCC corn loans. Participants will receive 25¢/bu. annual storage payments. The

feed grain reserve's minimum release price is $2.50/bu. (125 percent of the loan rate); its mandatory release rate is $2.80/bu. (140 percent of the loan rate).

After surveying the corn situation, the government announced a 10 percent set-aside rule on November 15, 1977. At that time it was billed as a tentative set-aside with the Secretary deciding whether to finalize it after the January stocks report was released. If exports and domestic use were reducing stocks at a strong pace and if weather conditions appeared unfavorable, administration experts felt that the need for a set-aside would be lessened.

The set-aside was also billed as tentative because the USDA wanted a more precise estimate of farmer response to the measure. Howard Hjort, Director of Economics, reported in November that telephone surveys of farmers indicated that participation could be as high as 55 percent or as low as 10 percent. Since then the Director has not needed to call farmers for their opinions. Thousands of producers visited Washington in January. One of their demands and/or threats was a 50 percent set-aside for wheat and corn.

Given such strong vocal support for set-asides, one might expect that corn farmers would be planning to cut back corn acreage in compliance with the 10 percent set-aside. However, the USDA report of farmers' planting intentions in 34 states as of January 1 showed that planned corn acreage was down only 2 percent and overall feed grain acreage only 1 percent. Farmers say they want a larger set-aside, yet apparently they will not comply with the current program. This contradiction rests on several farmers' realization that their long-run welfare is enhanced by reducing production but that the costs of reducing 1978 corn acreage are greater than the associated government benefits. The maximum deficiency payment of 10¢/bu. and the protection afforded by the $2.00/bu. loan rate are so low that when farmers sit down and evaluate the alternatives for their individual operation, the open market route is more profitable. This may, in fact, be a dangerously false conclusion if it rests upon the assumption that other farmers will cut back production and cooperate with the government to hold up the corn market. If few corn producers comply, only those few will be eligible for CCC crop loans. Then the corn market will have to absorb full-out production without the safety valve of CCC crop loans removing corn from the market. Prices could plummet to levels below those of this year's weak market.

Corn policy, therefore, is in a very tight spot. There are several alternatives. The USDA can continue with 10 percent set-aside and hope that more farmers will comply and cut back acreage. Director Hjort is attempting to hold the line here. He stated in the January 23 Wall Street Journal, "More acres will be set aside by feed grain farmers over the next few months." Yet, Director Hjort doubts the farmer call for a planting strike will have much impact on farmers' decisions. Voluntary production control without compensation sufficient to withdraw acres from production has never succeeded. Moreover, several farmers feel that under current supply, demand, and price conditions, a 10 percent set-aside suffices to guarantee them a loss next year. Even though this guaranteed loss may be less than the prospective open market loss, they prefer to protest by not complying.

A second alternative available to the USDA is to remove the 10 percent set-aside. This would recognize farmers' rejection of the policy and reestablish producer eligibility for deficiency payments, commodity loans, and disaster payments. Government could then prevent the possible collapse of the corn market.

Neither of the first two alternatives will substantially reduce production. Surpluses would add to our large carry-over stocks, making control of production in the following year even more critical and expensive. The benefits from compliance need to be raised if production is to be controlled this year. The Secretary could lower the loan rate to depress the open market price and increase the value of deficiency payments. This would lower farm income but push farmers to participate in the set-aside to minimize income losses. At this point, lowering the loan rate may be politically unacceptable because farm income is already low enough to cause farmer protest.

Target prices were set by Congress and the Secretary cannot change them to meet current policy needs. This may prove to be a short-sighted attempt by the Congress to control the budgetary cost of the commodity programs. If the Secretary could raise the target price for corn from $2.10/bu., the benefits from participation in the set-aside would increase, 1978 farm income would increase, and production would be cut back. This would keep carry-over stocks in line with contingency needs and raise market price. Although raising the target price may be the most desirable solution to problems in the corn market, it can only be achieved by an act of Congress.

SOYBEANS

In contrast to wheat and feed grain markets, the soybean market has been relatively strong. Although the record 1977 harvest brought prices down from last year's $7.00/bu. average, price continues to be above $3.50/bu. government loan rate. There is no target price deficiency payments income support mechanism for soybean producers.

Prices for soybeans may continue to decline during 1978 for two reasons. First, this year's ending stocks are projected to rise from last year's 7.3 percent to 16.3 percent of utilization. Second, the January planting intentions indicate that producers are switching from corn and cotton to soybeans, resulting in an 8 percent expected increase in acres planted this spring. If this is correct, then a record 63.1 million acres will be planted to soybeans. Unless an unanticipated increase in exports materializes, increasing supply will outpace demand during the 1978-79 marketing year, pushing price towards the loan rate.

COST OF PRODUCTION AND TARGET PRICE ADJUSTMENTS

Perhaps the most critical feature of government policy during 1978-1981 will be the level of target prices. This is because they provide income support and incentive for growers to comply with government policy directives. The 1978 target prices for wheat and feed grains were set by Congress in the 1977 Food and Agriculture Act. The final price levels represent a compromise between groups that sought different levels of price protection for farmers and purchasers of farm products and different levels of budget protection for taxpayers. Higher target prices raise farm income but also lower prices and increase supplies available to purchasers of wheat and feed grains (see Figure 1, Page 2). Although cost of production estimates were undoubtedly consulted by each of these groups when they were formulating their case and by the House-Senate Conference Committee when making the final judgment, 1978 target prices are not based on an exact cost of production formula. Targets for 1979 to 1981, however, will be adjusted in accordance with a limited cost of production series.

The cost series contains the following categories: machinery costs, direct input costs, and general farm overhead costs. All land and management costs are excluded. The former is excluded to avoid building a price-land cost spiral into policy; the latter is excluded because it is not easily measurable. Table 1 gives the national average annual cost of production per planted acre, yields per planted acre, and costs per bushel for wheat and corn for 1974 to 1977. USDA estimates for 1978 are also given.

Table 1: The National Average Cost of Production and Yields per Planted Acre for Wheat and Corn - 1974 to 1978.

	WHEAT			CORN		
	Costs per Planted Acre	Yield per Planted Acre	Costs per Bushel	Costs per Planted Acre	Yield per Planted Acre	Costs per Bushel
1974	47.99	24.7	1.88	101.94	69.6	1.46
1975	61.51	28.5	2.12	122.37	85.7	1.43
1976	62.95	27.1	2.26	128.70	87.1	1.48
1977+	64.49	28.2	2.23	133.56	90.7	1.48
1978*	68.44	27.8-31.8	2.10-2.41	140.56	83.3-93.3	1.45-1.62

+ Preliminary and subject to revision.
* USDA estimates.

Source: USDA Report 77.338, "Cost of Producing Food Grains, Feed Grains, Oilseeds, and Cotton, 1974-76", June 1976, and Gail Garst, USDA-ERS Cost of Production Staff, Oklahoma State University.

Observe how cost of production per planted acre increases each year but cost per bushel occasionally decreases because yield increases more rapidly than cost per planted acre. Wheat acre production cost, for example, increased from $62.95 to $64.49 and costs per bushel declined from $2.26 to $2.23 between 1976 and 1977.

A formula adjusts a target price from its 1978 level by adding the amount received by subtracting the average cost of production per bushel during the 1977 and 1976 crop seasons from the average during the 1976 and 1975 seasons. Stated more succinctly, a new target price equals the previous year's value plus the difference in a two-year moving average of cost of production per bushel. Regardless of index behavior, the targets cannot be adjusted below 1978 levels. One way to see how rapidly this adjustment procedure may increase target prices is to examine how recent cost estimates would have adjusted 1977 target prices back to 1976 and ahead to 1978 and 1979. The last adjustment uses the midpoint of USDA projections for 1978 costs and yields.

Table 2: Using the Cost of Production per bushel to Adjust 1977 Target Prices for Wheat and Corn Back to 1976 and Ahead to 1978 and 1979.

Year	Wheat	Corn
1976	2.71	1.99
1977	2.90	2.00
1978	2.96	2.03
1979	2.96	2.09

The results displayed in Table 2 indicate that, in general, this cost of production adjustment will not rapidly increase target prices. If Congress had not set 1978 target prices for corn at $2.10/bu. and for wheat at $3.00/bu. or $3.05/bu., they would have increased from their 1977 levels to only $2.03/bu. and $2.96/bu., respectively.

In addition to being a slow mover, the current cost-target price adjustment procedure may work against the stabilization efforts of the government. When yields increase from the previous year, the cost of production per bushel decreases. Therefore, the increase in target price is depressed in a year that has production above desired levels due to unexpected high yields. Government attempts to reduce production via set-asides during the upcoming crop year may be foiled because the target price is too low to induce farmers to participate in the set-aside. The adjustment, for example, of 1977 corn targets to $2.03/bu. in 1978 would have increased farmer rejection of the current corn set-aside.

Perhaps the originators of this adjustment procedure felt that a lower target price would induce producers to reduce supply on their own. In general, this does not occur because an overproduction trap exists in agricultural markets. To cover fixed costs such as taxes and mortgage payments when market prices are declining, the only option open to individual farm operators is to expand production. Overproduction, however, serves no economic market and further depresses prices. Current behavior in the corn market is consistent with this phenomena.

There are several alternatives to the current procedure of adjusting target prices. The most appealing policy change would be to allow the Secretary of Agriculture to adjust target prices in order to balance cost of production and budgetary considerations with stabilization objectives. The Secretary currently has discretionary authority over loan rates but Congress would probably balk at transferring more power over the economy and government spending to the executive branch.

A less visible alternative is to substitute an average of the most recent three of four years' yields for current yield in the cost per bushel formula. This would capture the trend in yield and weaken the link between last year's

yield and this year's target price. Therefore, policymakers would have better chances in dealing with variation of supply around trend. The Secretary has the authority to make this change.

From the farmers' viewpoint, a more advantageous change is to base target price adjustments on the percentage change in production costs per acre. This formula would reserve the benefits of trend increases in yields (increases in productivity) for the farmer, whereas, the previous alternative passes the benefits of increases on to others in society. In other words, changes in costs are assessed at the farm gate before the farmer applies his management skill to them. Although this cost series does not include management, this alternative does not implicitly incorporate it in a fashion that works against the farmer. The current adjustment procedure does.

An argument for this shift in policy equity towards farmers can be made by reference to government policy on wage settlements in industry. Federal authorities do not demand that wages go down when worker productivity increases. To the contrary, wage increases that reflect productivity gains are sanctioned by government wage-price authorities even in inflationary periods. Operating on the principle of equal treatment for farmers, the government should allow farmers to retain the benefits of their increased productivity. Farmer productivity (output per man-hour) increased 319 percent from 1950 to 1975. By comparison, labor productivity in the private nonfarm sector increased by 68 percent. Food manufacturing, wholesaling, and retailing operations are included in the latter statistic.

Table 3 illustrates the adjustment to 1977 wheat and corn target prices that would be forthcoming from each of the formulas discussed above. The current procedure is included in the table to facilitate comparison and a two-year moving average yield is substituted for current yield in the cost per bushel series used to calculate the trend yield alternative.

Table 3: Target Price Adjustment - The Current Procedure, the Trend Yield Alternative and the Percent Change in Cost per Acre Alternative.

	WHEAT			CORN		
	Current Procedure	Trend Yield Alternative	% Change in Cost Per Acre	Current Procedure	Trend Yield Alternative	% Change in Cost Per Acre
1977	2.90	2.90	2.90	2.00	2.00	2.00
1978	2.96	2.92	2.97	2.03	2.00	2.07
1979	2.96	2.97	3.14	2.09	2.04	2.18

The percent change in cost per acre adjustment moves target prices up more rapidly than the others. As reasoned earlier, this is because productivity gains reflected in yield increases are conserved for the farmer. The wheat target price increases 24¢ and the corn target price increases 18¢ under this method

between 1977 and 1979. The trend alternative increases target price but is on the average no stronger than the current procedure. Using a three of four year moving average yield would smooth the trend yield estimates and probably cause this series to increase each year. However, the size of the change between 1977 and 1979 would remain nearly the same.

Perhaps the most revealing facet of this analysis of target price adjustment is that none of the adjustment procedures displayed in Table 3 suffice to increase the target prices from the 1977 levels set in the most recent Food and Agriculture Act to the 1978 levels set in the same Act. Congress examined the current situation of agriculture and determined that the target price for wheat should increase from $2.90 to $3.00 or $3.05 and that the target price for corn should increase from $2.00 to $2.10. The implication to farmers and directors of policy in the USDA is obvious. If they wish higher target prices, perhaps their only alternative is to return to Congress.