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AGRICULTURAL ECONOMIC OUTLOOK--INTO THE 90's¹

John N. Ferris
Department of Agricultural Economics
Michigan State University

While the agricultures of many nations in the world struggle to keep food supplies in line with expanding population, the U.S. and certain other exporting nations must address the opposite problem--how to keep reins on burgeoning production. Except for wartime and the unusual 1970's, U.S. farm policy has consistently had to deal with low returns to farmers and oversupply tendencies. The Soil Bank was introduced in the 1950's. Since 1960, we have had to employ some type of acreage reduction program on grain in two out of every three years.

We did have some success in pulling down inventories in the late 1960s. This coupled with an unexpected shortfall in world crops created a tight grain situation in the early 1970s and prices rose sharply. At the same time, world economic growth began to pick up, particularly in the developing nations. Their economic expansion was enhanced by loans from the developed nations. As major currencies were put on floating exchange rates, the dollar weakened and this also encouraged U.S. grain and soybean exports.

U.S. agriculture became very dependent on export markets in the 1970s. In less than a decade, exports increased from about 10 percent of gross farm income to nearly 30 percent.

Optimism was rampant in the 1970s. Even after returns to land fell off in the late 1970s and interest rates began to rise, farm land prices continued upward. By 1981, the average price of farm land in the Cornbelt reached a peak of \$1720 per acre (Figure 1). That year, average interest rates to new borrowers at the Federal Land Bank were 11.3 percent. That implies a cost of owning land at nearly \$200 per acre. That is more than double the return to land at that time (Figure 2). Put another way, a farmer buying land in 1981 who was not counting on land prices to continue to rise, would have to see corn prices rise another dollar before non-land costs would be covered.

There was some basis for optimism. The growth in U.S. exports was spectacular in the 1970s. Wheat and coarse grain exports increased from 40 million MT in 1970 to 112 million MT in 1980. In other words, grain exports

¹Seed, Weed and Fertilizer School, Kellogg Center, Michigan State University, East Lansing, MI, December 16, 1986.

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Figure 1
 PRICE OF FARM LAND
 IN THE CORNBELT AND MICHIGAN

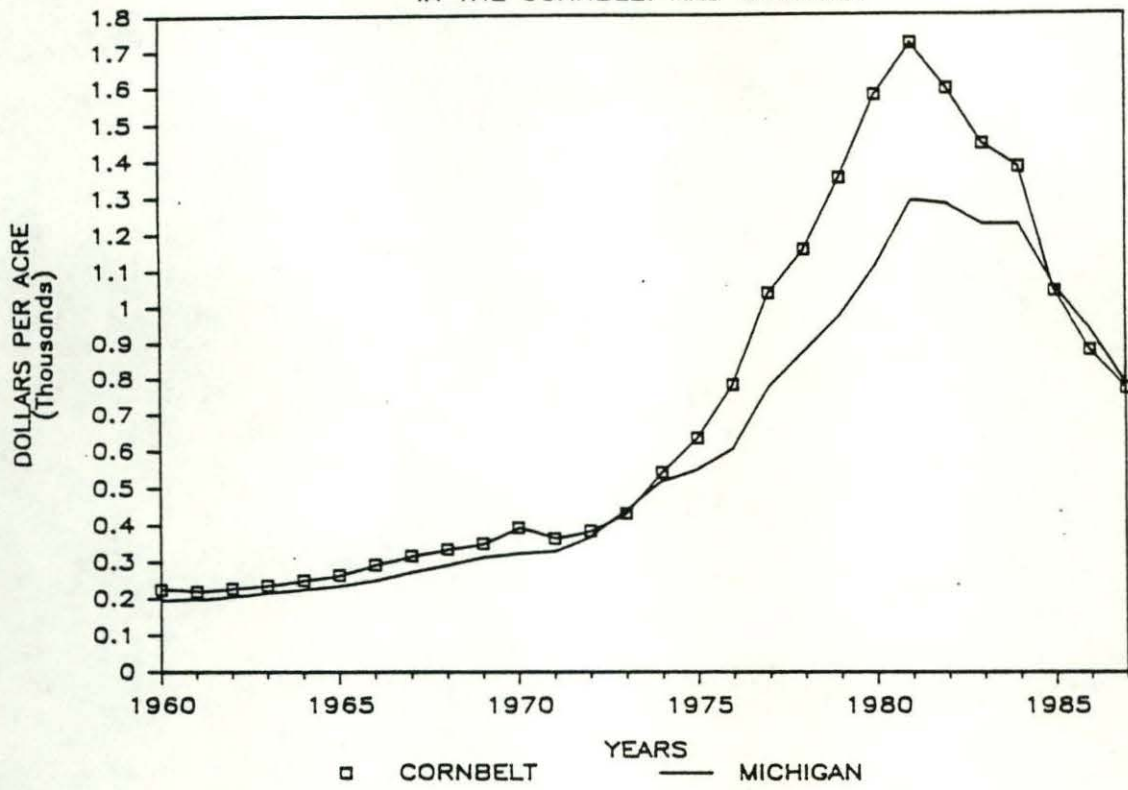
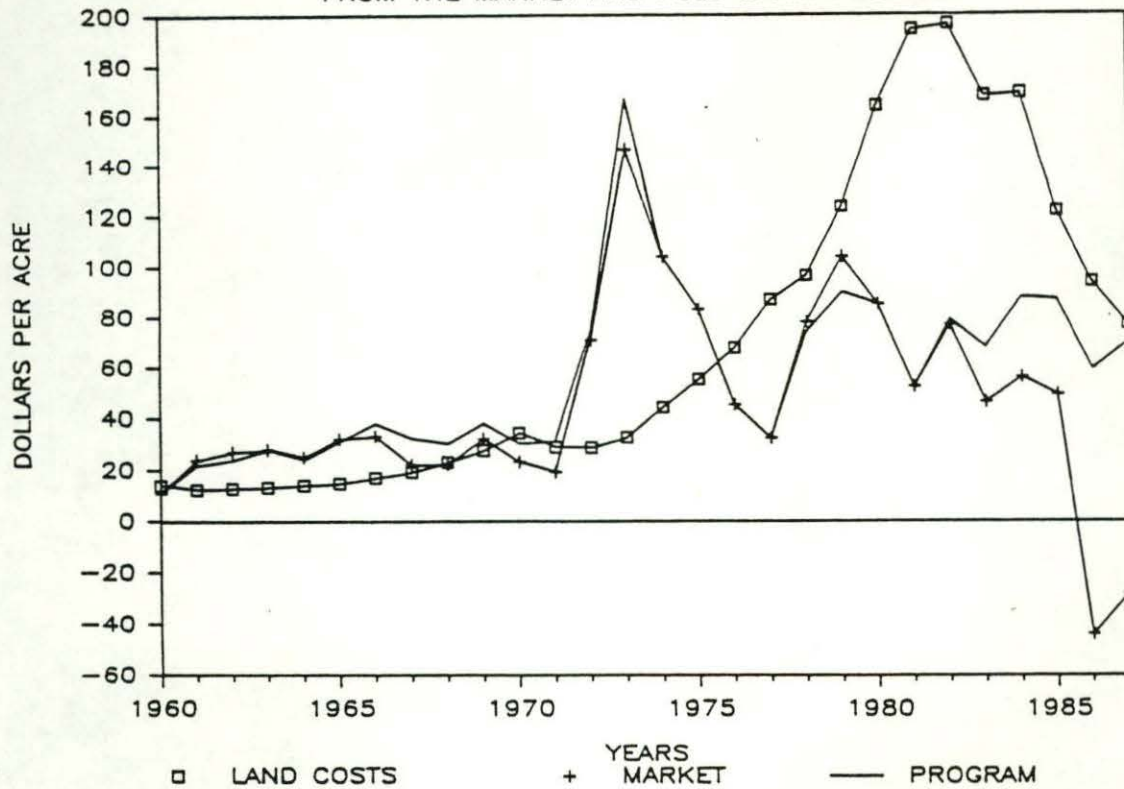


Figure 2
 COSTS AND RETURNS ON LAND IN CORN
 FROM THE MARKET AND FEED GRAIN PROGRAM



nearly tripled. Soybean exports doubled. However, even under the most favorable circumstances, it should have been clear that this pace would be difficult to maintain in the 1980s. What came as a shock was that the trend was actually reversed. In the first half of the decade of the 1980s, wheat and coarse grain exports from the U.S. nearly dropped in half. Soybean exports leveled off.

Many of you, I'm sure, are familiar with the litany of what happened.

1. Efforts to bring inflation under control in the 1970s caused the Fed to tighten monetary controls resulting in higher interest rates and a much stronger dollar.
2. The world experienced a major business recession in the early 1980s.
3. The recession combined with high interest rates tied up foreign exchange in developing nations and their imports were adversely affected.
4. Spectacular progress was made in some nations to increase food supplies, notably China.
5. Generally good weather prevailed in 1984-86; yields on grain were above trend.

In spite of efforts to pull land out of production in the U.S. in recent years, the world carryover of grain at the end of this crop year will add up to 350 million MT, about 22 percent of annual use. In the U.S., carryover of corn will be about 82 percent of annual use, wheat about 80 percent of annual use and soybeans, 30 percent of annual use.

Now we come to the future. What are the chances that the grain and soybean markets can be pulled out of their depressed state in the next couple of years? Not very good. The Administration is using the Food Security Act of 1985 in an all out effort to make corn, wheat and soybeans competitive in world markets. The loan on corn was set at the minimum allowable for 1986 at \$1.92 per bushel and recently the USDA announced that the loan would be \$1.82 on the 1987 crop. One bright spot is that Gramm-Rudman will not likely be applied on 1987 supports. The loan could be reduced further in the balance of the decade by 5 percent per year. The loan on wheat is \$2.40 this year, \$2.28 on the 1987 crop. As with corn, the Secretary can continue to drop the loan by 5 percent per year. The loan on soybeans can drop to as low as \$4.50 per bushel (Tables 1 and 2).

Furthermore, the Secretary of Agriculture has made and will make liberal use of generic PIK certificates to pay farmers participating in the programs. This facilitates the release of grain under loan, in the reserves and owned by CCC.

The Food Security Act of 1985 provides for means of holding back on production through acreage restrictions. On the set-aside portion, the upper limit on feed grains is 20 percent of the base and on wheat the upper limit goes

Table 1
Corn and Soybean Supports

	Year					
	1985	1986	1987	1988	1989	1990
<u>Corn</u>						
Target price	3.03	3.03	3.03	2.97	2.88	2.75
Statutory loan	--	2.40	2.28	2.17	2.06	1.95 ^a
Actual loan	2.55	1.92	1.82	1.74	1.65	1.57
Farm price	2.25 ^b	1.50 ^c				
Deficiency payment	.48	1.11				
<u>Soybean Loan</u>	5.02	4.77	4.53	4.50	4.50	4.50

^aMinimum

^bOctober 1985 - February 1986.

^cForecast for crop year.

Table 2
Wheat Supports

	Year					
	1985	1986	1987	1988	1989	1990
Target price	4.38	4.38	4.38	4.29	4.16	4.00
Statutory loan	--	3.00	2.85	2.71	2.57	2.44 ^a
Actual loan	3.30	2.40	2.28	2.17	2.00	1.95
Farm price	2.99 ^b	2.30 ^c				
Deficiency payment	1.08	1.98				

^aMinimum

^bAverage of June - October.

^cForecast for crop year.

from 25 percent in 1986 to 27.5 percent in 1987 and to a maximum of 30 percent in 1988-90. In addition, the Conservation Reserve feature of the Act is designed to retire up to 45 million acres of highly erodible cropland under 10-15 year contracts. About 800,000 acres in Michigan are eligible for this program.

The Feed Grain and Wheat programs are very attractive alternatives relative to not participating. Over 80 percent of base acreages are in the program and will continue to be. Even so, it has become apparent that carryover levels will continue at relatively high levels over the next several years.

As a consequence, the USDA announced in late October that 1987 feed grain producers would have the option of setting aside an additional 15 percent of their base. For this, they would receive \$2.00 per bushel times their program yield times the 15 percent of their base acres. This should budget out to be attractive to most farmers. The USDA said that 50 percent of the diversion payment would be in advance and of that amount half would be in cash and half in generic PIK certificates.

If this diversion program succeeds in taking another 10 million acres out of corn in the next few years, if yields follow trends, and if our exports of corn expand at the rate of the 1970's at about 20 percent per year, the carryover will reach desired levels in 1990. At that time, some of the land put to conserving uses could begin to be brought back into production. The point is that markets on feed grains, along with wheat and soybeans as well, are likely to remain depressed for several years. For a period, at least, this will be a favorable situation for livestock producers purchasing feed.

Also, with target prices remaining relatively high in 1987-90 (\$3.03 to \$2.75 on corn and \$4.38 to \$4.00 on wheat) and with some input costs declining, net income to participants in these programs will be fairly well maintained near current levels. Tables 3 and 4 provide a format for budgeting through returns from corn and wheat for both participants and non-participants in the farm programs. These are national averages and would not necessarily be representative of Michigan farms, especially on wheat. However, the conclusion would be the same--participation is attractive for farmers with adequate bases. Net returns over variable costs are likely to be two to three times as great for participants as for non-participants--at least for the next couple of years.

The tables compare returns per base acre of participants vs. non-participants under the indicated market price projections for 1986-90 and assuming the programs announced for 1987 continue in 1988-90. These comparisons would be realistic for farmers whose base acreages were near to normal plantings. While projecting market prices is fraught with uncertainty, it really doesn't make much difference to participants as long as prices are between the loan rate and the target. The higher the price, the lower the deficiency payment.

Barring major departures from trend yields or changes in the program, the net income outlook for crop producers participating in the program is probably better established for a 5 year planning horizon than has been the case for some

Table 3
Prospective Returns to Participation in the Feed
Grain Program in 1986-90 Under Assumed Conditions^a

	Unit	Years				
		1986	1987	1988	1989	1990
Participant						
<u>Gross from the market</u>						
Price of corn (or loan) ^{b,c}	\$/bu.	1.69	1.67	1.67	1.85	2.10
x yield	bu.	119	117	119	121	123
x (100% - % AR + DV) ^d		.80	.65	.65	.65	.65
= gross per base acre	\$	161	127	129	146	168
<u>Diversion payment</u>						
Payment rate	\$/bu.	.73	2.00	2.00	2.00	2.00
x program yield	bu.	106	106	106	106	106
x % DV		.025	.15	.15	.15	.15
= gross per base acre	\$	2	32	32	32	32
<u>Deficiency payment</u>						
Target price	\$/bu.	3.03	3.03	2.97	2.88	2.75
- price of corn (or loan) ^b	\$/bu.	1.92	1.82	1.74	1.85	2.10
= deficiency payment rate	\$/bu.	1.07 ^e	1.21	1.23	1.03	.65
x program yield	bu.	106	106	106	106	106
x (100% - % AR + DV)		.80	.65	.65	.65	.65
= gross per base acre	\$	91	83	85	71	45
Total gross per base acre	\$	254	242	246	249	245
<u>Variable Costs</u>						
per planted acre	\$	138	131	135	141	147
x (100% - % AR + DV)		.80	.65	.65	.65	.65
= per base acre	\$	110	85	88	92	96
Per conserving use acre	\$	10	10	10	10	10
x (% AR + DV)		.35	.35	.35	.35	.35
= per base acre	\$	2	4	4	4	4
Total		112	89	92	96	100
Net returns per base acre over variable costs	\$	142	153	154	153	145
Non-Participant						
Price of corn	\$/bu.	1.50	1.65	1.67	1.85	2.10
x yield	bu.	117	113	115	117	119
= gross per acre	\$	175	186	192	216	250
- variable costs	\$	136	131	135	141	142
= net return per acre	\$	39	55	57	75	108

^aEffect of Gramm-Rudman-Hollings not included after 1986.

^bWhichever is higher.

^cLoan is discounted 15 cents to account for average costs of storing on and off the farm.

^dAR = % of base in acreage reduction; DV = % of base in paid diversion.

^eCash deficiency payments were discounted by 4.3% in 1986 to account for G-R-H.

Table 4
Prospective Returns to Participation in the Wheat
Program in 1986-90 Under Assumed Conditions^a

	Unit	Years				
		1986	1987	1988	1989	1990
Participant						
<u>Gross from the market</u>						
Price of wheat (or loan) ^{b,c}	\$/bu.	2.30	2.13	2.13	2.46	2.80
x yield	bu.	34.5	40.1	40.9	41.4	41.9
x (100% - % AR + DV) ^d		.75	.725	.70	.70	.70
= gross per base acre	\$	60	62	61	71	82
<u>Diversion payment</u>						
Payment rate	\$/bu.	1.10	1.10	1.10	1.10	1.10
x program yield	bu.	33.6	33.6	33.6	33.6	33.6
x % DV		.025	0	0	0	0
= gross per base acre	\$	1				
<u>Deficiency payment</u>						
Target price	\$/bu.	4.38	4.38	4.29	4.16	4.00
- price of wheat (or loan) ^b	\$/bu.	2.40	2.28	2.17	2.46	2.80
= deficiency payment rate	\$/bu.	1.91 ^e	2.10	2.12	1.70	1.20
x program yield	bu.	33.6	33.6	33.6	33.6	33.6
x (100% - % AR + DV)		.75	.725	.70	.70	.70
= gross per base acre	\$	48	51	50	40	28
Total gross per base acre	\$	109	113	111	111	110
<u>Variable Costs</u>						
per planted acre	\$	57	56	55	57	60
x (100% - % AR + DV)		.75	.725	.70	.70	.70
= per base acre	\$	43	41	38	40	42
Per conserving use acre	\$	10	10	10	10	10
x (% AR + DV)		.25	.275	.30	.30	.30
= per base acre	\$	2	3	3	3	3
Total		45	44	41	43	45
Net returns per base acre over variable costs	\$	64	69	70	68	65
Non-Participant						
Price of wheat	\$/bu.	2.30	2.13	2.13	2.46	2.80
x yield	bu.	32.4	38.2	38.8	39.3	39.8
= gross per acre	\$	75	81	83	97	111
- variable costs	\$	57	56	55	57	60
= net return per acre	\$	18	25	28	40	51

^aEffect of Gramm-Rudman-Hollings not included after 1986.

^bWhichever is higher.

^cLoan is discounted 15 cents to account for average costs of storing on and off the farm.

^dAR = % of base in acreage reduction; DV = % of base in paid diversion.

^eCash deficiency payments were discounted by 4.3% in 1986 to account for G-R-H.

time. Shifting the income source from the market to government payments also means that risks will be less in these next few years.

With the farm program in place and income outlook fairly stable, some major questions remain.

1. What will happen to land prices?
2. Will the current farm program bring supplies into balance with demands in a reasonable time?
3. Will there be successful efforts to modify the farm program in a substantial way?

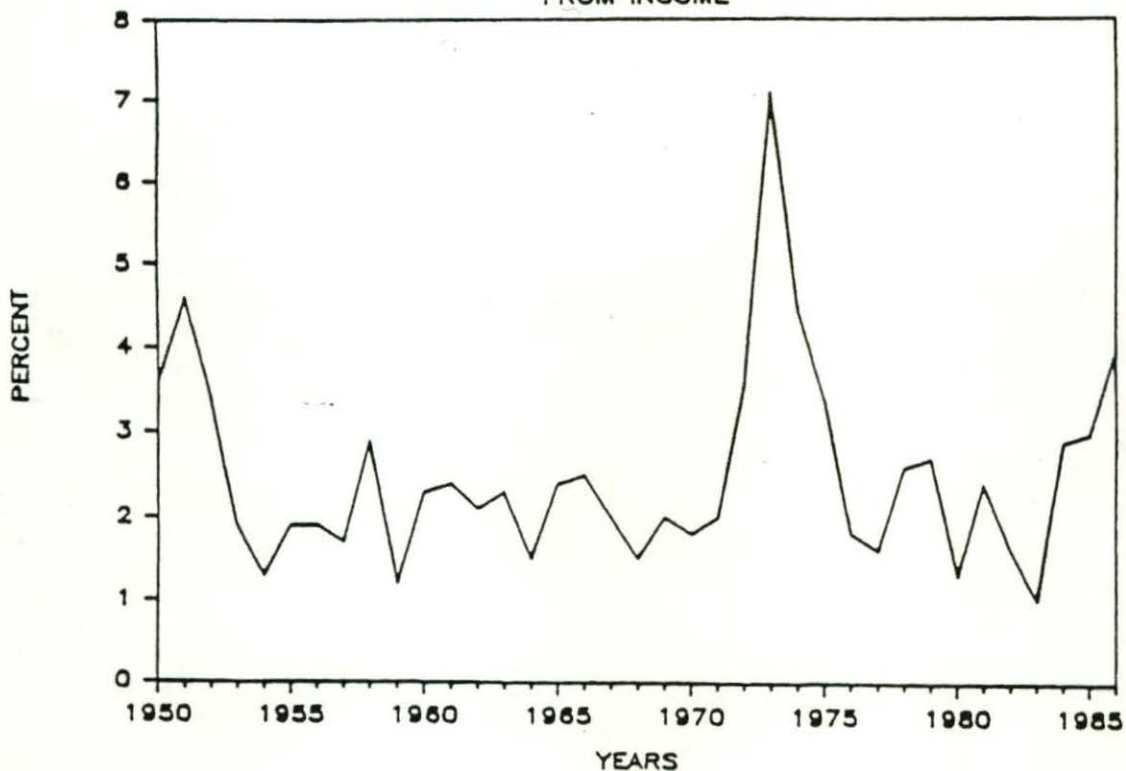
Since 1981, farm land prices have been cut in half in the Cornbelt and have also dropped significantly in Michigan (Figure 1). This, along with an easing in farm mortgage interest rates, has brought the average cost of buying land (with an adequate base) down near to where it can be "cashed out." This means that commercial interest rates (projected to 10% in 1987) times the price of farm land (about \$750-800 per acre) results in an implied annual cost of about \$75-80 per acre. Participants in the Feed Grain Program should be realizing returns over non-land costs close to that level in the next few years (Figure 2). This should provide some support for the land market--although the momentum of pessimism may keep downward pressure on land prices for awhile. (Note in Figure 2 the growing disparity between returns to land for farmers in the Feed Grain Program and those who are not.)

An intriguing question is what farmers attitudes will be toward buying land when the market stabilizes. From 1950 to 1986, U.S. farmers earned an average return close to 2-3 percent on their assets from current income (Figure 3). This seems rather small for such a risky enterprise. However, it can be partly explained by real capital gains which added another 2-3 percent in most years and as much as 5-10 percent in a number of years in the 1970's (Figure 4). Since 1980, returns to farm assets from real capital gains have been negative, dropping as low as minus 12-14 percent. Total returns from both income and real capital gains averaged 4-6 percent excluding the peak years of the 1970's and lows of the 1980's (Figure 5). If farmers buy and hold land without expecting real capital gains, will they adjust their production plans so that the current income flow will generate returns to assets in line with the long term pattern of 4-6 percent including capital gains?

What about the adjustment of supplies to demand? To get a perspective, let's look at some salient long term trends.

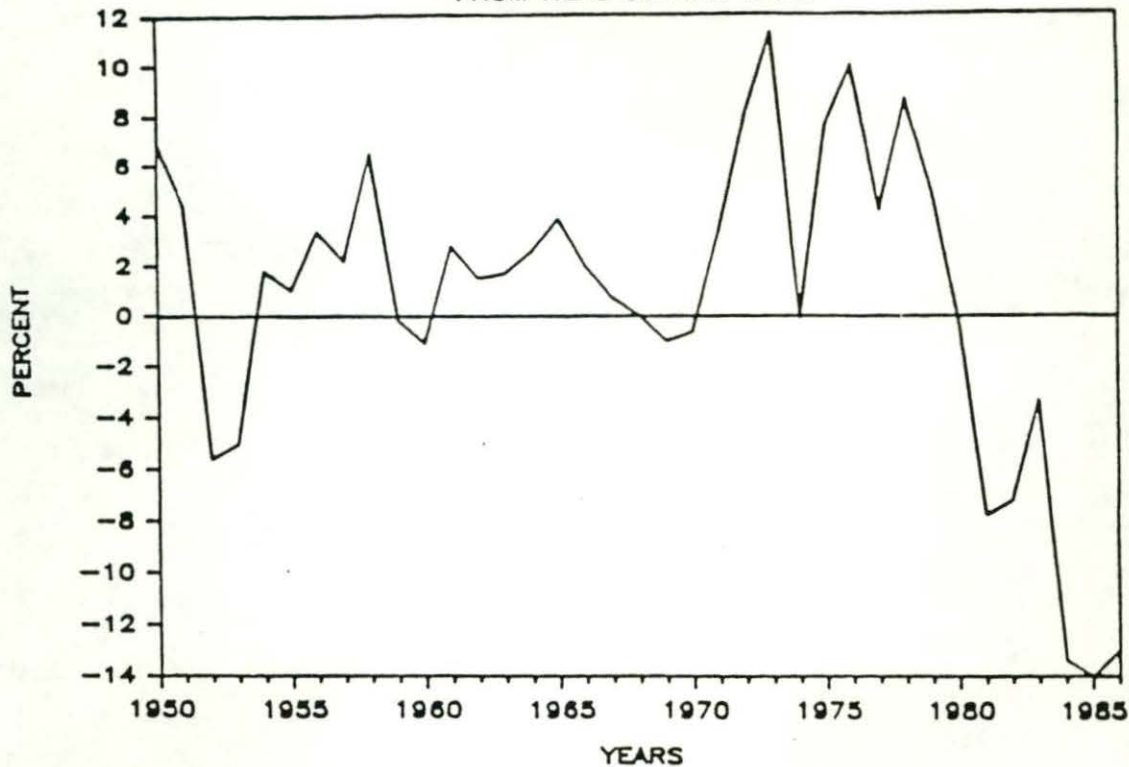
1. Per capita consumption of feed grain and wheat in the United States (Figure 6). Note that we are consuming about .7 MT per capita of feed grain and .1 MT per capita of wheat and there has been little trend. The future growth will be in line with population--about .9 percent per year.

FIGURE 3
 RETURNS TO FARM ASSETS
 FROM INCOME



Source: Melichar, Emanuel, FRS.

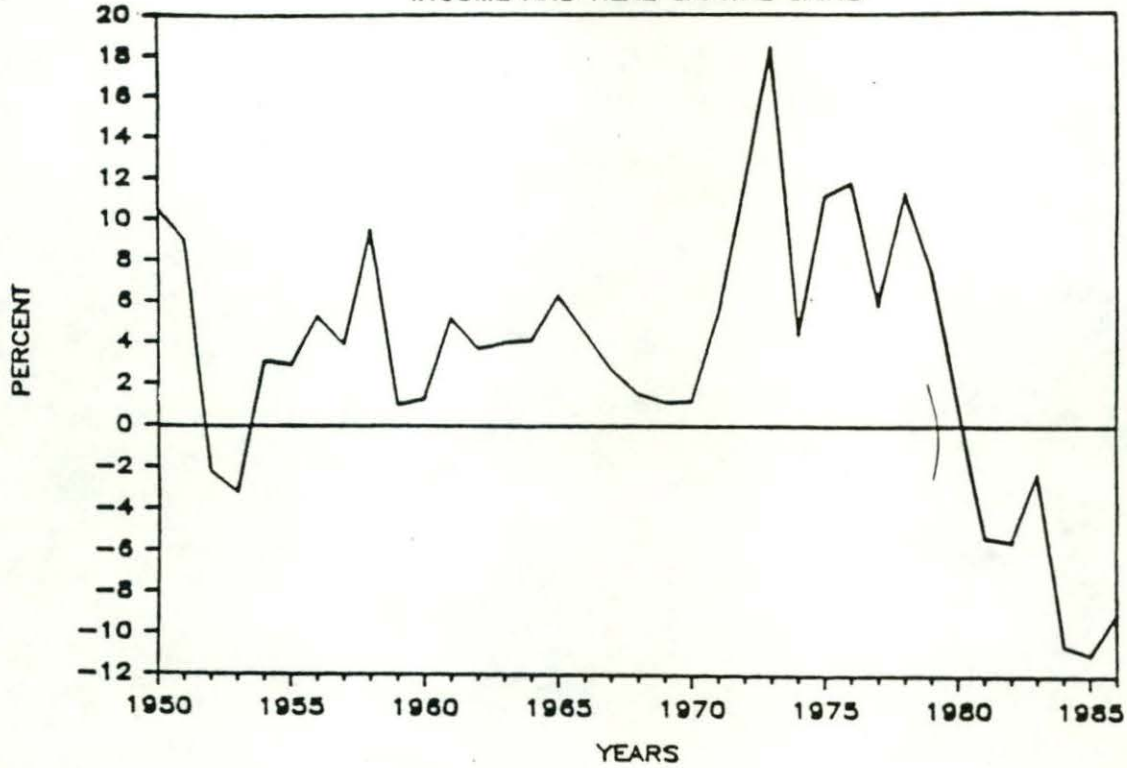
FIGURE 4
 RETURNS TO FARM ASSETS
 FROM REAL CAPITAL GAINS



Source: Melichar, Emanuel, FRS.

FIGURE 5

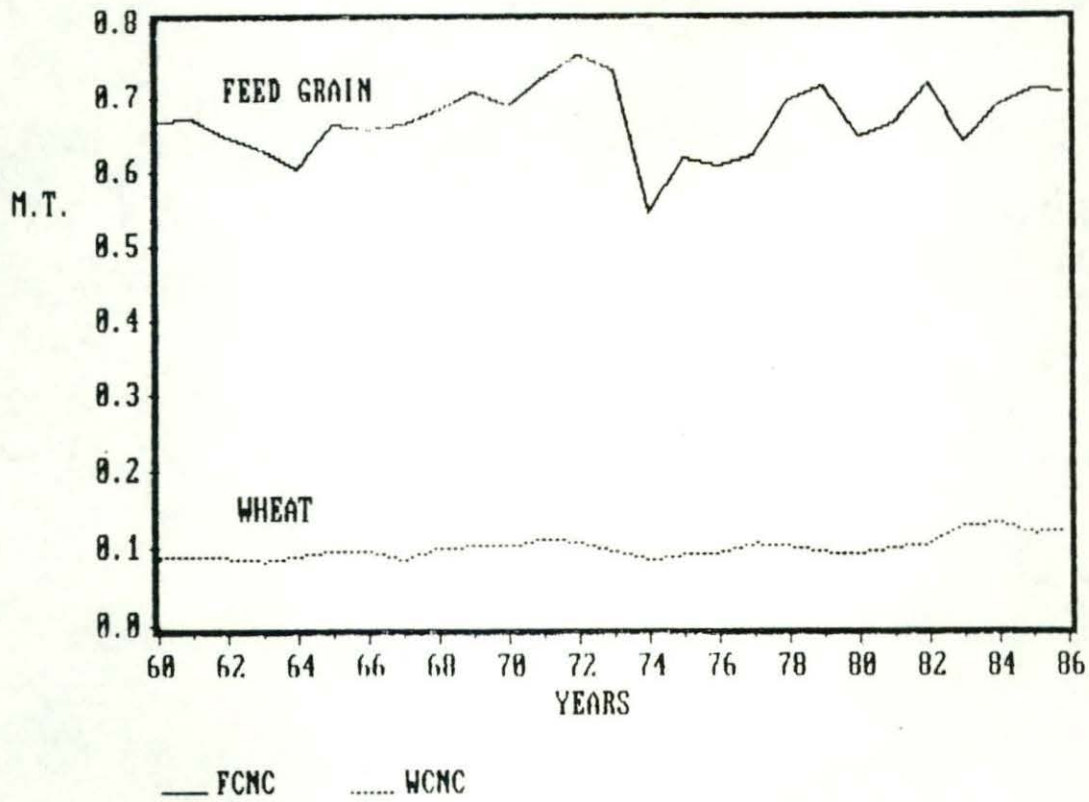
TOTAL RETURNS TO FARM ASSETS
INCOME AND REAL CAPITAL GAINS



Source: Melichar, Emanuel, FRS.

FIGURE 6

PER CAPITA CONSUMPTION OF FEED GRAIN AND WHEAT
IN THE UNITED STATES



On livestock, we expect milk consumption to keep pace with population but is not likely to add much to feed grain demand. Liquidation in beef cows will likely continue until 1988 or 1989 with only moderate growth afterward. Pork production should expand markedly in 1988 and maybe 1989 before reversing the cycle. No major long term trend up or down is expected. Broiler and turkey production will continue to expand and replace red meat in the diet. Overall, not much gain in per capita consumption of feed grain is expected in the U.S. as we shift our consumption to more efficient converters of feed grain to meat.

2. Per capita consumption of feed grain and wheat outside the U.S. (Figure 7). Note the rapid gain in per capita consumption of feed grain until about 1978 and then the reversal. At about .13 MT/person, this is only 1/5 the level in the U.S. The key is economic growth in the developing world to get them back on the upward climb. The most promising are the higher income countries among the developing nations.

Wheat consumption per capita has increased steadily since 1960 and has reached the .1 MT/person level of the U.S. Further gains may be slow.

3. While per capita consumption has eased, total consumption of feed grain outside of the U.S. has increased since 1960 due to population growth (Figure 8). The pattern for world population growth is pretty well set for the next 15 years. As shown in Figure 8, feed grain and wheat consumption is projected to increase 50 percent by the year 2000 if trends in per capita consumption of 1960-86 continue.
4. Will the rest of the world become self-sufficient in feed grain and wheat? Although the trends of the 1980's point in that direction, the conclusion is not clear from a longer term perspective (Figures 9 and 10). China for example has become an exporter of feed grain. With acceleration in its economic growth, it may not be able to keep pace with demands for feed grains.

These are very aggregate statistics and can be misleading. The point is that there will be opportunities for growth in the demand for agricultural products in the world of major proportions if the developing world can return to its long term economic development pattern. Experts do not give us many promises.

A second question is how effectively can American farmers compete in world markets whatever happens to total demand? My personal opinion is that we have the expertise, the technology, management and infrastructure to meet competition. A necessary condition is a weakened dollar and the lowering of the government loan rates on grain. Real exchange rates have dropped more than 20 percent on corn and soybeans since 1985. Production costs are easing and with the drop in land prices, U.S. producers are in an improved competitive position.

We are "babes in the woods" in marketing, however. Why? Because we have not had to be effective marketers in the past. The rapid expansion in exports in the 1970's was handed to us. Now we realize that we are going to have to work

FIGURE 7

PER CAPITA CONSUMPTION OF FEED GRAIN AND WHEAT
OUTSIDE OF THE UNITED STATES

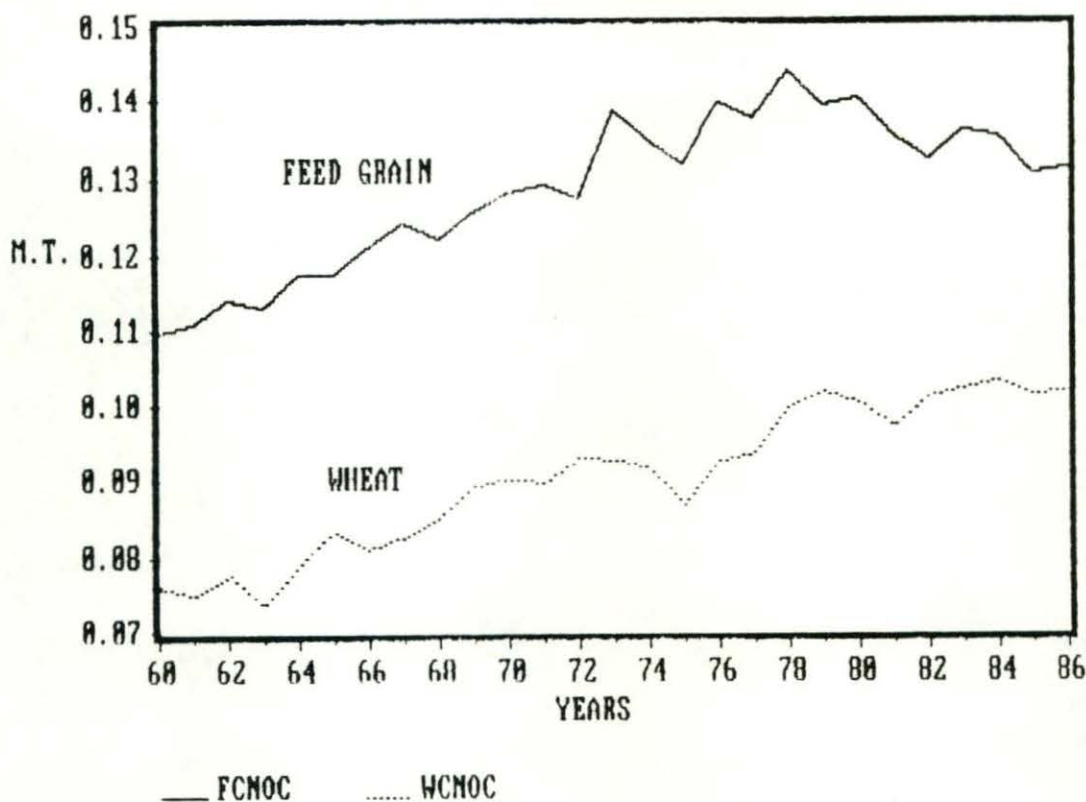


FIGURE 8

TOTAL CONSUMPTION OF FEED GRAIN AND WHEAT
OUTSIDE OF THE UNITED STATES, 1968-86 AND PROJECTED TO 2000

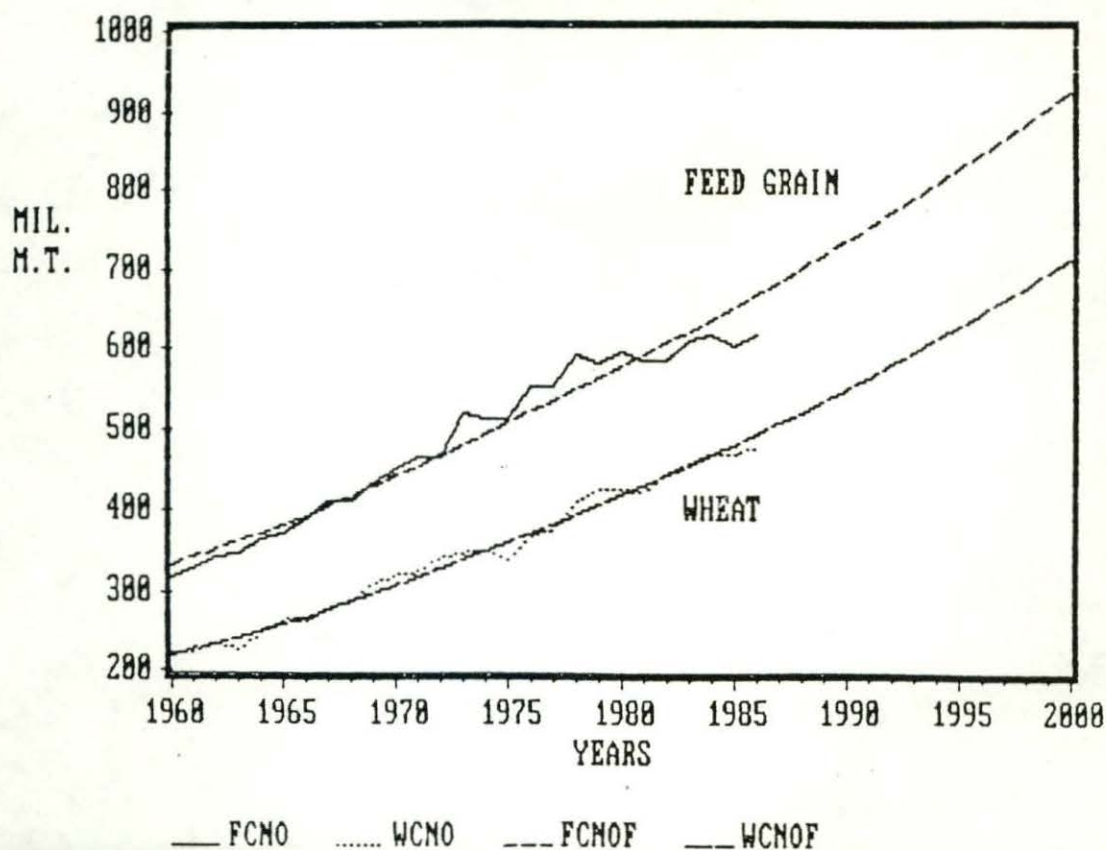
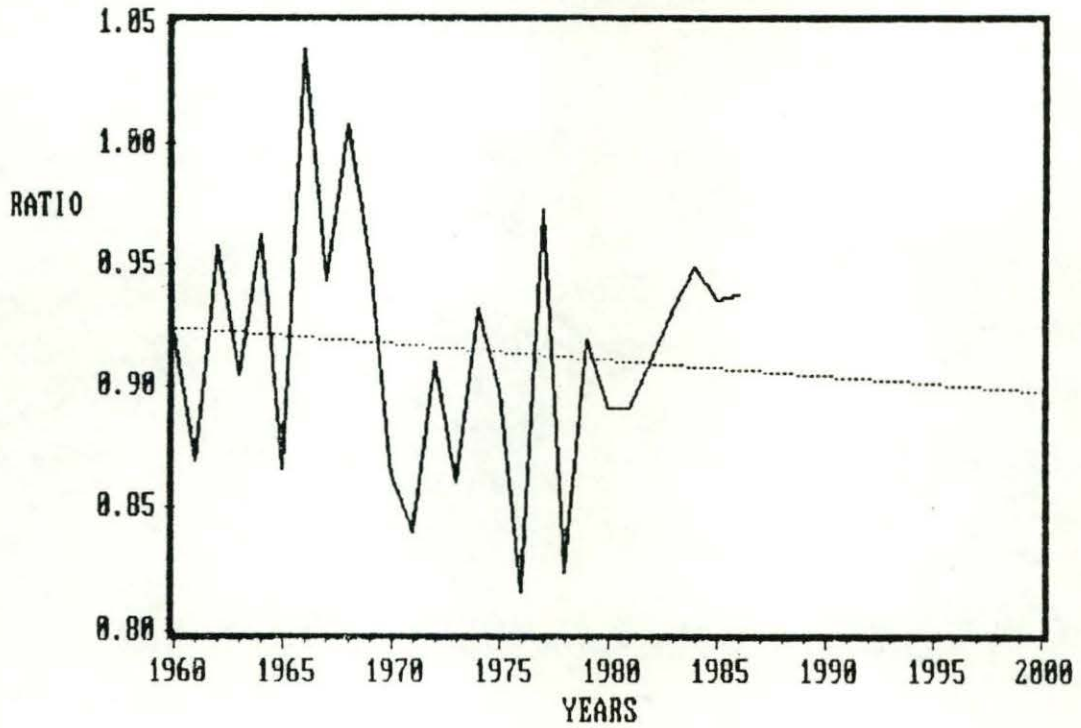


FIGURE 9

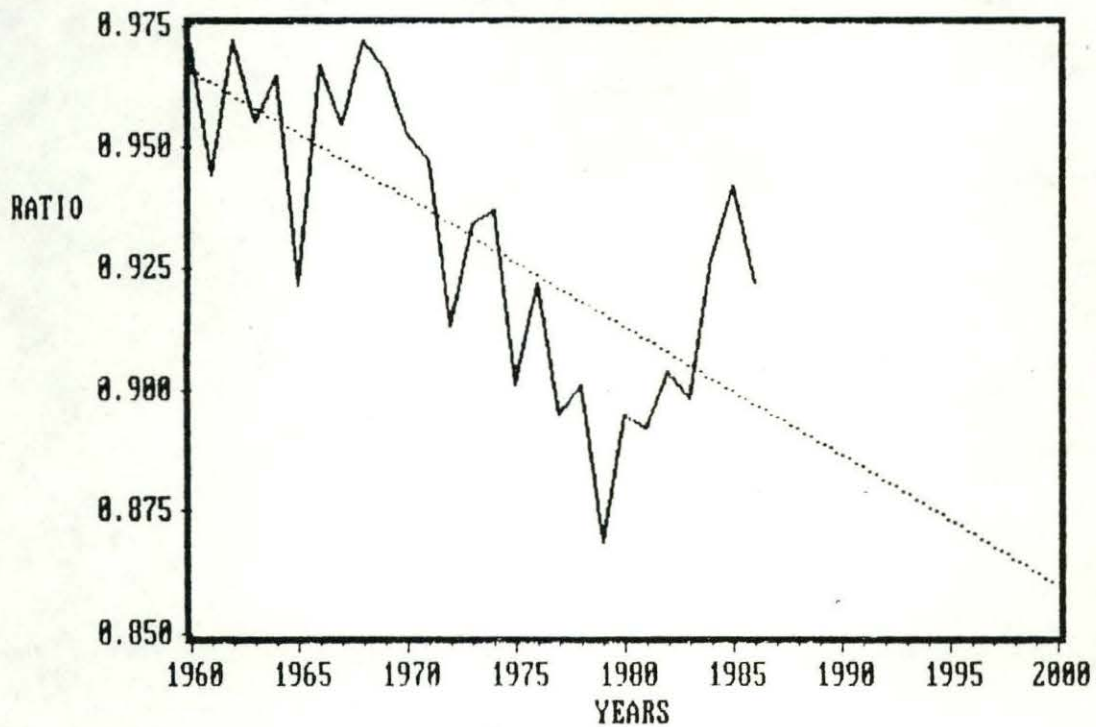
RATIO OF WORLD PRODUCTION OF WHEAT OUTSIDE THE U.S.
TO WORLD CONSUMPTION OF WHEAT OUTSIDE THE U.S.



— RQCWO RQCWF

FIGURE 10

RATIO OF WORLD PRODUCTION OF FEED GRAINS OUTSIDE THE U.S.
TO WORLD CONSUMPTION OF FEED GRAINS OUTSIDE THE U.S.



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to build markets abroad. We could learn a few things from countries that have had to depend on export markets over the years--like Denmark.

Bringing the carryover down and developing markets will not be achieved quickly. At best, it appears that a balance in the supply-demand picture will not be attained before 1990. The current farm program may have to be modified but major surgery is not contemplated. There is some chance that a diversion program will be tacked on wheat as was done on feed grains. While the November 1986 election tips the scale a bit toward mandatory production controls, no clear mandate emerged.

Concerns have been raised about the cost of the program. Agriculture has received about as much Treasury allocation as politically possible. On the other hand, wholesale reduction of supports does not appear politically feasible.

As we review the 1980's, it is easy to get discouraged and become rather pessimistic about the future of agriculture. The untimely rain in Michigan this fall added to the stress. In the middle of this, Paul Kindinger, Director of the Michigan Department of Agriculture and Doug Ross, Director of the Michigan Department of Commerce launched an aggressive campaign to promote Michigan's food and agriculture industry. This may seem to be poor timing but I think not. We need positive thinking. But even more, we need to carefully appraise our comparative advantage in Michigan for production and processing, address some of the problems we know we have in marketing, continue to improve our business climate, and exchange ideas on how Michigan agriculture and the food industry can more effectively compete in U.S. and world markets.