Table 18--Alternative net income measures under the permanent legislation and no-support scenarios

Item	1983	1984	1985	1986	1987	1988	1989	1990	1986-90 average
					Billion dollars				
Permanent legislation:									
Net cash income 1/	40.1	33.6	36.1	33.9	38.3	39.8	42.1	44.7	39.8
Net farm income: 2/									
Current dollars	16.1	33.8	26.7	27.8	28.1	29.2	30.7	32.4	29.6
1972 dollars	7.5	15.1	11.2	11.0	10.7	10.6	10.6	10.6	10.7
					Dollars				
Average net income 3/									
per farm	6,793	14,400	11,350	11,900	12,050	12,550	13,250	14,000	12,750
					Billion dollars				
No supports:									
Net cash income 1/	40.1	33.6	36.0	25.7	26.2	29.0	27.5	28.5	27.4
Net farm income: 2/									
Current dollars	16.1	33.8	26.6	15.2	15.1	17.8	16.1	16.8	16.2
1972 dollars	7.5	15.1	11.1	6.1	5.7	6.3	5.8	5.5	5.9
					Dollars				
Average net income 3/									
per farm	6,793	14,400	11,400	6,850	7,100	8,750	7,850	8,400	7,800

1/ Cash income minus cash production expenses.
2/ Gross farm income including cash and noncash sources minus cash and noncash production expenses.
3/ The number of farms is assumed to decline from 2.37 million in 1983 to 2.30 million by 1990 under permanent legislation and 2.0 million under no supports.

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by the market's tendency to capitalize enhanced program benefits into asset values. In contrast, eliminating supports would cause severe enough cash flow and net income problems to result in significant capital losses as asset values, particularly land values, declined to new market equilibrium levels.

Reverting to permanent legislation, with its high supports masking market signals to move resources out of agriculture, could take the sector back to the rapid asset appreciation and growth in equity experienced in the 1970's. On the other hand, eliminating supports would strengthen the downward pressure on asset values and equity erosion the sector has experienced since 1981 until agriculture's resource base moved into closer balance with demand for its products.

Differences in asset appreciation and depreciation are most readily apparent in the land values projected under the two scenarios. With permanent support programs in place, land values could increase as much as 55 percent over the 1986-90 period to $1,200 per acre compared with $745 currently. While this nominal rate of increase would fall somewhat short of appreciation over the 1970's, the real rate of increase would be comparable. Land values in this range would be well in excess of the prices even their enhanced income earning capacity would warrant. This "overvaluation" would reflect strong demand for additional acreage by producers interested in expanding their operations, even at the cost of bidding up the price of the 1 to 3 percent of farmland changing hands in any one year. It would also enhance land's investment appeal outside the sector as a resource that, with Government support programs in place, would appreciate over time.

Under the no-support scenario, land values would fall to reflect both their reduced income-generating capacity and the greater risk involved in farming without Government programs. A drop in land values of the magnitude shown in table 19 would more than likely be accompanied by large-scale changes in ownership. Many high-cost producers would be pressured to leave agriculture

Table 19--Projected land values under the permanent legislation and
no-support scenarios 1/

Year	Permanent legislation		No supports	
	Nominal dollars	1972 dollars 2/	Nominal dollars	1972 dollars 2/
		Dollars per acre		
1983	745	360	745	360
1984	740	340	740	340
1985	780	345	730	325
1986	840	355	510	215
1987	900	355	540	210
1988	1,005	380	580	215
1989	1,120	400	605	215
1990	1,220	410	640	215
1986-90: average	1,015	380	575	215

1/ Data are mean values for all agricultural land and are not comparable to the data used to estimate farm real estate asset value.
2/ Deflated using the implicit GNP deflator.

as their incomes fell, their equity eroded, and their assets were acquired by producers better able to cover costs after recapitalization. The drop in values would also reflect an overall decrease in land use of 20 to 30 million acres, or the equivalent of 8 to 10 percent of the cropland base under the no-support scenario.

Movements in total assets would be less severe but would parallel this movement in land values. As table 20 shows, a decision to revert to permanent legislation would work first to rebuild, and eventually to expand on, the asset gains of the 1970's. Adopting the no-support alternative would result in further erosion in the asset gains made in the 1970's, but with a bottoming out and upturn in asset values after the resource adjustment process was completed early in the 1990's.

The changes in equity implied by these changing asset values would be even more pronounced. The difference in debt between the two scenarios is relatively small compared to likely changes in asset values. Debt would increase substantially under the permanent legislation scenario because of increased borrowing to finance rising operating expenses and capital expenditures for items such as land and machinery. Debt would fall under the no-support scenario as some farmers opted to, or were forced to, liquidate and pay off notes. Lenders would also quite likely tighten credit criteria and reduce lending to the sector as a whole and possibly even to financially-sound operators interested in acquiring bargin-priced assets.

The differences in debt levels over the period after these payoff and lending adjustments were taken into account could be $25 billion--small relative to asset values but equal to more than 10 percent of the sector's debt total. As a result, virtually the full swing in asset values would be reflected in equity gains and losses--up more than 50 percent in nominal terms under the permanent legislation scenario and down more than 10 percent under the no-support scenario. These changes in equity adjusted for inflation translate into a 10-percent gain under the permanent legislation scenario and a 55-percent loss under the no-support scenario over the 1985-90 period.

The financial pressures at work under each of the scenarios would be reflected in the sector's changing debt/asset and debt/equity ratios. While still low in comparison with other sectors of the economy, debt would grow under the no-support scenario whether measured as a proportion of assets or relative to income. Debt relative to net cash income would increase significantly, with the ratio averaging 8:1 over the last half of the 1980's compared with a postwar average of 5 to 6:1. These measures point to agriculture undergoing an initial financial shock of serious proportion, followed by a consolidation period that would leave the sector somewhat weaker but still financially sounder than many other sectors of the economy.

Under the permanent legislation scenario, the ratios shown in table 20 suggest that agriculture would continue to be in a strong wealth position compared with most other sectors of the economy. Debt burdens would lighten relative to asset values and equity. Debt relative to net cash income would not change significantly but would be fractionally above the sector's historical ratio.

Finance and Farm Structure

The combined income, asset, and equity impacts of adopting either support alternative could be significant enough and differ widely enough across farm enterprises to affect the structure of agriculture.

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Table 20--Farm assets, debt, equity, and financial ratios under the permanent legislation and no-support scenarios

Item	January 1									:1987-91
	1983	1984	1985	1986	1987	1988	1989	1990	1991	:average
	Billion dollars									
Permanent legislation:										
Real estate assets	770	765	765	810	880	960	1,090	1,235	1,365	1,105
Nonreal estate assets	275	260	270	300	320	335	355	375	395	355
Total assets	1,040	1,025	1,035	1,110	1,200	1,295	1,445	1,610	1,760	1,460
Debt	215	210	215	225	225	255	270	280	295	265
Proprietor equity	830	815	820	885	875	1,040	1,175	1,330	1,465	1,195
No supports:										
Real estate assets	770	765	765	755	515	545	580	620	660	585
Nonreal estate assets	275	260	270	280	275	280	290	305	315	295
Total assets	1,045	1,025	1,035	1,035	790	825	870	925	965	880
Debt	215	210	215	215	200	205	210	215	230	210
Proprietor equity	830	815	820	820	590	620	660	700	735	670
	Ratio									
Permanent legislation:										
Debt/asset	0.21	0.21	0.21	0.20	0.19	0.20	0.19	0.17	0.17	0.18
Debt/net cash income	5.4	6.3	6.0	6.6	5.9	6.4	6.4	6.3	6.4	6.3
Debt/equity	.26	.26	.26	.25	.23	.25	.23	.21	.20	.22
No supports:										
Debt/asset	.21	.21	.21	.21	.25	.25	.24	.23	.24	.24
Debt/net cash income	5.4	6.3	6.0	8.4	7.6	7.2	7.6	7.5	7.9	7.6
Debt/equity	.26	.26	.26	.26	.34	.33	.32	.31	.31	.32

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From a sector-wide perspective, eliminating supports could result in serious enough cash flow problems and capital losses to force heavily indebted farmers to liquidate at least part of their operations. High-cost operators, operators who recently entered agriculture with a limited capital base, and operators who invested heavily in new or expanded capacity in the late 1970's and early 1980's would be most seriously affected. By 1990, the sector could lose 15 to 20 percent of its current operators. It is unclear, however, how the total number of operations would change. Lower land values could make it easier for new entrants to farm, working to increase farm numbers. Lower land values could also encourage efficient producers to expand, possibly accelerating the trend toward larger farms. In either case, the current structure would come under significant pressure.

In contrast, reverting to permanent legislation would strengthen cash flow for program commodity operators and boost capital gains and growth in equity for asset owners. Many of the relatively inefficient or highly leveraged producers who might otherwise have been forced out of business would be sheltered by parity-linked support prices. More efficient producers seeking to expand their operations would have to compete with these less efficient producers, whose ability to bid for inputs and acquire or hold onto a significant portion of the sector's resources would strengthen under permanent legislation.

Typical Farms Analysis

The effects of adopting either scenario would vary greatly among farms depending on their commodity mix, size, and tenure and equity arrangements. Financial models for seven typical farms operating under three different tenure and equity arrangements were used in this study to assess impacts by farm type.

The typical farms analyzed included:

- An Illinois corn-soybean farm with 360 acres (180 acres in corn and 180 acres in soybeans) and assets valued in 1982 at $1.1 million.

- An Iowa corn-hog farm with 240 crop acres (140 acres in corn, 60 acres in soybeans, and 40 acres in oats) and 100 litters of farrow-to-finish hogs. Assets were valued in 1982 at $704,000.

- A Kansas wheat-livestock farm with 480 crop acres (360 acres in wheat, 80 acres in alfalfa, and 40 acres in sorghum) and 45 beef cows. Total value of assets in 1982 was $598,000.

- A Louisiana rice-soybean farm with 480 acres (160 acres in rice and 320 acres in soybeans) and assets valued in 1982 at $810,000.

- A Mississippi Delta cotton-soybean farm with 1,040 crop acres (480 acres in cotton and 560 acres in soybeans). Assets were valued in 1982 at $1.7 million.

- A Washington wheat-fallow farm with 1,080 crop acres (540 acres in wheat and 540 acres in fallow). Assets were valued in 1982 at $983,000.

- A Wisconsin dairy farm with 45 milk cows and 160 crop acres (60 acres of corn, 30 acres in corn silage, 20 acres of oats, and 50 acres in pasture). Total value of assets in 1982 was $496,000.

The tenure and equity characteristics of these typical farms proved extremely important in determining the survival of farms under adverse conditions and the distribution of benefits under more favorable economic conditions. This analysis used the following tenure and equity combinations to assess the impacts of different support programs:

- <u>Full ownership and 100-percent equity</u> representing well established operations with longtime owners.

- <u>Full ownership and 60-percent equity</u> representing well established operations but with above-average levels of debt.
- <u>Part-ownership and 40-percent equity</u> representing recently established operations with above-average levels of debt.

The data shown in table 21 summarize the results of this typical farms analysis using composite indices of economic well-being to provide a single measure of impact. The indices were calculated using actual 1980-83 data and projected 1990 values for net cash income, net worth, and asset values.

The results suggest that all farms would enjoy higher net cash incomes, appreciation in asset values, and gains in net worth under the permanent legislation scenario. However, benefits would be unevenly distributed. Increases in land values would be the major source of improved well-being, particularly over time as higher production expenses eroded initial gains in net cash incomes. Full owners and, to a lesser extent, part-owners would receive the largest share of gains in land values. In some cases, part-owner operators with partial equity could actually be worse off if the cost of renting higher priced land offset appreciation on the limited acreage they owned.

On a commodity basis, dairy farmers, followed closely by cotton and feed grain producers, would experience the largest gains. Gains in net cash income, asset values, and net worth would raise the index for the Wisconsin dairy farm by one-half to two-thirds from the 1980-83 level and the index for the Mississippi cotton-soybean farm and Iowa corn-hog farm by roughly two-fifths.

Wheat producers would fare less well as wheat support levels slip somewhat relative to the other crops. The Kansas wheat-livestock and Washington wheat-fallow farms would show marginal increases in their respective indices. Specialized livestock operators outside the dairy sector would benefit the least because permanent legislation's major programs focus almost exclusively on crops. However, gains in feed grains and wheat would help to offset the impact of small gains or losses in livestock and keep the increase in welfare shown for mixed crop-livestock farms larger than it would otherwise be.

Equity/asset and debt/asset ratios for representative farms not included in the economic well-being index would reflect this same general pattern and wide differences between farms. The indebtedness of most farms would increase under the permanent legislation scenario due to increased farmer use of debt to finance expansion. Although the increases in the value of farm assets would generally not be sufficient to improve equity/asset ratios, asset values would increase fast enough to increase equity in all cases.

As table 21 suggests, the no-support scenario would reduce economic well-being for most of the farms analyzed in the short term. Net cash incomes would become negative for many of the hardest hit farmers and equity would decline substantially as cash flow deficits were refinanced and farmland values declined. Full owners with little debt and, as a result, lower fixed costs

would be the least affected. Their capital losses would be largely paper losses, since they would likely not be forced to liquidate any significant portion of their operations in a depressed farm asset market. Farms with initial debt/asset ratios above 50 percent would face considerable pressure to liquidate.

Among the major commodity groups, dairy farms and, to a lesser extent, cotton and feed grain producers would suffer the worst declines in economic well-being under the no-support scenario. Corn Belt feed grain operators with livestock activities and livestock operators other than dairymen would be least affected.

Equity/asset and debt/asset ratios reflect the same general no-support pressures. Among large farms ($250,000 or more per year in sales), roughly

Table 21--Composite indices of economic well-being by type of farm, 1990 1/

Type of farm	Permanent legislation	No supports
	1980-83 = 100	
Illinois corn-soybean:		
Full owner, full equity:	115	100
Full owner, part equity:	100	80
Part-owner, part equity:	80	50
Iowa corn-hog:		
Full owner, full equity:	145	110
Full owner, part equity:	140	105
Part-owner, part equity:	130	90
Kansas wheat-livestock:		
Full owner, full equity:	105	95
Full owner, part equity:	85	60
Part-owner, part equity:	75	20
Louisiana rice-soybean:		
Full owner, full equity:	110	85
Full owner, part equity:	95	40
Part-owner, part equity:	50	10
Mississippi Delta cotton-soybean:		
Full owner, full equity:	140	95
Full owner, part equity:	135	75
Part-owner, part equity:	115	50
Washington wheat-fallow:		
Full owner, full equity:	115	100
Full owner, part equity:	100	80
Part-owner, part equity:	85	40
Wisconsin dairy:		
Full owner, full equity:	155	65
Full owner, part equity:	160	45
Part-owner, part equity:	180	45

1/ Weighted sum of net cash income, net worth, and asset value indicators.

one-third of the operators and one-fifth of the debt would be concentrated in operations with debt/asset ratios above 40 percent. Debt/asset ratios above 40 percent have historically been associated with severe cash flow problems that usually require refinancing as fast as asset appreciation permits. These operations would face serious liquidation pressure as land values declined and net cash income fell off sharply.

Among small farms, the deterioration in cash flow and land values likely with the no-support scenario would be less disruptive since these farms typically have higher off-farm earnings on which to rely. The medium-sized farms ($50,000 to $250,000 in sales per year) are in an intermediate position. Their debt/asset ratios are traditionally lower than for the very large farms, but their off-farm income is more limited than that of small farms.

The extent to which these financial problems would change the number of medium- and large-sized farms would depend on the forbearance of the lenders and which types and sizes of farms would bid for liquidated assets. Small and very small farms could use their off-farm income sources and relatively strong equity positions to weather the period of adjustment. Resource use would remain largely unchanged, however, despite these financial adjustments. Most land and other farm assets would continue to be used, with the possible exception of assets in the process of changing ownership and marginal acreage in the process of reverting from cropping to less intensive uses. Even farms undergoing foreclosure would likely be rented out to neighboring operators or to new operators with a lower cost structure. Thus, while the assets might change ownership and be revalued lower, most would continue in production after the transition was completed.

NATURAL RESOURCE AND CONSERVATION IMPACTS

Reverting to the permanent support statutes or operating without supports would affect agriculture's natural resource base through resulting changes in land and water use, the economics of conservation, and the potential for public involvement in resource management. While difficult to measure with any precision, these effects in combination could prove significant enough--particularly over time--to make resource conservation an important consideration in evaluating alternative support policies.

Land and Water Use

The farm sector's demand for land and water differs significantly between support scenarios. Permanent legislation's high and rising commodity prices and nonrecourse loan programs would encourage producers both to increase the land and water committed to agricultural production and to use the natural resources already committed more intensively. Conversely, land and water use would tend to fall with the reductions in farm output likely with supports eliminated.

As much as 30 million more acres would be used in crop and livestock operations with the permanent support programs in place than under the no-support alternative. Much of this acreage increase would involve use of more marginal and/or erosive land. In many cases, operators would also change crop rotation patterns and shift land from extensive pasture and forage uses to more intensive cropping. Moreover, shifts in acreage between crops would also be a concern in some areas of the country where land used for more erosive crops would expand at the expense of land in less erosive crops. Increased cotton plantings in the Southern Plains, for example, would increase pressure on the land base even if the total acreage cropped did not change.

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These factors in combination suggest that a return to the permanent support programs could ultimately lead to increased soil erosion and threaten longer run soil productivity in the most seriously affected areas of the country. The projections shown in table 22 suggest that soil loss could be 5 to 10 percent higher than under the no-support scenario. 4/

Increased demand for water under the permanent legislation scenario would also add to pressures on agriculture's natural resource base. Water use could be as much as 25 percent higher with the permanent support programs in place than under the no-support option. The demand for water would increase faster than demand for land as operators used it both to bring added acreage into cultivation and to irrigate existing acreage being used more intensively.

The geographic distribution of this added demand for water could work to increase resource pressure even more than the increase in water use would suggest. Much of the increased demand for water would be in areas dependent at least in part on mining groundwater. The increased crop production in the Southern and parts of the Northern Plains likely under the permanent legislation alternative, for example, would increase pressure on the Ogallala Aquifer significantly.

The Economics of Resource Conservation

The financial situation in the farm sector would also differ enough between scenarios to raise questions about the changing economics of resource conservation. Some analysts argue that the high and stable prices and guaranteed outlets provided for in the permanent support programs would improve the economics of conservation. Higher returns would theoretically

Table 22--Resource use under the permanent legislation and no-support scenarios in 1990

Item	Unit	Permanent legislation	No supports
Land in selected crops	Mil. acres	263	242
Total cropland	do.	495	465
Soil loss with 30-percent conservation tillage	do.	973	916
Soil loss with 58-percent conservation tillage	do.	594	561
Water use	Mil. acre/ft.	29	23

4/ The Iowa State University CARD agricultural modeling system was used to estimate soil loss and water usage under the two scenarios. A number of assumptions were made regarding the acreage of specific commodities, the location of production, the tillage methods used, and the use of abandoned cropland. Assumptions on the location and scale of production were taken from the commodity sections of this report while two conservation tillage adoption levels were assumed--the current 30 percent and an upper bound 58 percent. Finally, the land dropped from the crop production base was assumed to revert to grass and trees.

encourage farm operators to expand investment in soil conservation and water
management. However, data for the 1970's raise serious questions about the
linkage between returns and investment in conservation. Commodity prices and
producer returns during the late 1970's were relatively high but net
investment in soil conservation actually declined.

Conversely, with price supports eliminated and returns substantially lower,
investment in conservation could well shrink or stop altogether as operators
struggled to meet operating expenses. At the same time, however, pressure to
reduce production expenses could result in accelerated adoption of minimum
tillage and other resource-conserving farming practices. Evidence from the
late 1970's and early 1980's indicates that conservation tillage is frequently
adopted as much as a cost-saving measure as an erosion control strategy.

Public Resource Management

The potential for public involvement in improving private sector resource
management would also differ significantly between scenarios. Public
involvement in resource management to date has been limited to programs such
as the land bank and requiring that land idled under the acreage reduction
programs be put into a conserving use. Many conservation proponents propose
tying eligibility for support program benefits to improved resource management.
Requiring conserving use of land idled under the 1977 and 1981 Acts is often
cited as an example of what is being done, while linking diversion and
deficiency payments to improved land management is cited as an example of what
could be done. While the permanent support statutes include no provision for
conservation linkages in their current form, they do provide a framework for
public involvement that would be lacking under the no-support alternative.

Conservation Conclusions

Hence, on balance, the conservation advantages of adopting the no-support
scenario could be significant. Although higher commodity prices under
permanent legislation could encourage expanded investment in soil and water
conservation, pressure on agriculture's land and water base would be
significantly greater. Moreover, given the cost-price squeeze likely under
the no-support scenario, accelerated adoption of improved farming practices
such as conservation tillage could more than offset any drop in longterm
investment likely as a result of reduced producer returns. Finally, while
eliminating support programs would rule out one avenue for increased public
involvement in the management of privately owned resources, simpler and less
costly programs are available to address the issue.

AGRIBUSINESS AND RURAL DEVELOPMENT IMPACTS

Economic activity and employment in the agribusiness sector as a whole would
not differ substantially between scenarios. Agribusiness activity would be
less than 2 percent greater and employment 2 to 3 percent higher by 1990 with
supports eliminated than with the permanent support programs in place.
However, activity within the major agribusiness subsectors would differ
substantially between scenarios.

Reverting to the permanent support programs would boost economic activity and
employment in farming and the farm input and service industries. As noted
earlier in this report, reverting to the permanent support programs would
expand farm activity as much as one-third. This expanded farm activity would

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work in turn to increase input industry activity through increased demand and higher prices for items such as machinery, fertilizer, and pesticides. However, the higher commodity prices underlying increased activity in both of these subsectors would slow growth in economic activity in the industries that process, transport, and market farm products.

Conversely, activity in the input industries would stagnate or decline under the no-support scenario while farming activity would increase at less than half the pace likely under permanent legislation. However, growth in the processing, transportation, and export industries would accelerate. The scenario's lower commodity prices would generate increased activity in these volume-oriented subsectors that would more than offset slowed activity in farming and the input industries.

On balance, agribusiness activity under the no-support scenario would expand from $600 billion currently to $1,080 to $1,090 billion in 1990 compared with $1,050 to $1,060 billion under the permanent legislation scenario (table 23). Given differences in labor input/output ratios in the various subsectors of the agribusiness complex, 500,000 more jobs would be created under the no-support scenario than under the permanent legislation scenario.

The changes in the individual subsectors shaping this aggregate agribusiness perspective are highlighted in table 23.

Input Industry Impacts

The price and income support programs adopted in 1985 will affect the major input industries through their impact on farm demand for their products and the prices farmers were willing to pay for them. With permanent legislation's higher commodity prices and expanded acreage, input demand could increase 14 percent from 1985 through 1990 (table 24). Growth in input demand would be strongest in 1986 and 1987 as farm prices rose sharply to parity-linked levels and farmers expanded acreage 5 to 6 percent. Growth would continue through 1990, however, as farmers increased application rates for items such as fertilizer to accelerate growth in yields and output. The added business activity involved, particularly if increased demand generated stronger input prices, would allow many input industries to boost lagging returns and operate

Table 23--Employment and gross national product in agriculture-related sectors of the economy under the permanent legislation and no-support scenarios

Year	Employment		Nominal GNP	
	Permanent legislation	No supports	Permanent legislation	No supports
	Million workers		Billion dollars	
1981-83	22.5	22.5	610	610
1985	22.7	22.7	750	751
1986	23.4	23.6	813	818
1987	23.5	23.7	874	885
1988	23.5	23.9	933	951
1989	23.5	24.0	1,005	1,027
1990	23.6	24.1	1,058	1,083

closer to full capacity by 1990 than at any point to date in the late 1970's or 1980's. Conversely, the initial drop and subsequent slower growth in input demand likely with supports eliminated could leave 1990 input use 2 percent below 1985 levels. This decline in demand would be significant enough to keep plant capacity utilization in much of the industry at or below current lows until well into the 1990's and to force large-scale changes in the structure and operation of the most seriously affected operations.

The individual input industries would be affected differently by a decision to revert to the permanent support programs or operate without supports. The impact on the fertilizer and machinery industries would be particularly marked.

Fertilizer use from 1986 to 1990 under permanent legislation could increase 14 percent. Growth of this magnitude would allow domestic fertilizer producers to increase capacity utilization from an estimated 72 percent in 1983 to possibly 83 percent by 1990 (table 25). Growth in demand at this pace would quite likely reverse the fertilizer price declines experienced since 1981. Nominal prices would keep up with, and possibly exceed, the general rate of inflation. The farm value of fertilizer sales could reach $17 billion by 1990, compared with 1983 sales of under $10 billion and the 1981 record of $14 billion.

With no supports, fertilizer use would decline initially in 1986 and increase less than 2 percent for the 1985-90 period as a whole. Weak fertilizer demand would keep downward pressure on nominal fertilizer prices and lead to further real declines in industry revenues. The industry's capacity utilization rates could lag at 72 to 74 percent from 1986 through 1988 and increase slowly thereafter. Some of the hardest hit plants with higher than average costs could be forced to close during the 1986-88 period.

The impact of adopting either support scenario on the farm machinery industry would be as great or greater than the impact on the fertilizer industry. Farm machinery purchases are closely linked not only to production levels but also to net cash income, debt/asset ratios, and interest rates. These factors, combined with alternative levels of prices and returns, would widen differences in machinery demand between scenarios.

Table 24—Changes in use of selected inputs under the permanent legislation and no-support scenarios, 1986-90

Input	Permanent legislation	No supports
	Percent	
Seed	6	1
Fertilizer	14	2
Herbicides	3	-4
Insecticides	8	-5
Energy	9	2
Farm machinery	20	-13
Subtotal	13	-3
Total	14	-2

Machinery demand under permanent legislation could increase as much as 20 percent over the 5-year period, or fast enough to reverse the decline in prices and returns that the industry has experienced since 1979. Machinery industry receipts, taking into account increased sales and higher prices, could double in nominal terms by 1990 from $10 billion in 1983. Demand for new farm machinery under the no-support scenario could decline 13 percent from 1986 through 1990, with an initial 1986-87 drop of possibly twice this magnitude. This decline in machinery demand would put additional pressure on an industry that has experienced a steady decline in demand for its products since 1979. Plant capacity utilization levels could slip further below the 50-percent levels reported for many operations since 1981.

Under permanent legislation, demand for seed, pesticides, and energy would increase, albeit less sharply than demand for fertilizer and machinery. Demand for these inputs as a group would rise between 6 and 9 percent over the period analyzed. Given their current capacity, the seed and pesticide industries could meet demand increases of this magnitude without significant upward pressure on prices. Growth in demand for these items under the no-support scenario would vary between individual inputs. Demand for insecticides could drop as much as 5 percent, while demand for herbicides could slip 4 percent and demand for seed and energy could increase as little as 1 to 2 percent. Competition among pesticide manufacturers and seed producers would increase as sales declined and would add to downward pressure on prices. Changes in agriculture's use of energy between scenarios would be significant from a sector perspective but would be too small to affect economy-wide energy supplies, demand, or prices.

Table 25--Farm expenditures for fertilizer and fertilizer industry operating rates, actual 1977-84 and projected 1985-90

Year	Expenditures		Operating rate	
	Billion dollars		Percent of capacity	
1977	8.0		82	
1978	8.1		80	
1979	9.1		85	
1980	13.4		92	
1981	14.1		93	
1982	11.5		81	
1983	9.5		72	
1984	11.0		76	
1985	13.0		73	
	Permanent legislation	No supports	Permanent legislation	No supports
	Billion dollars		Percent of capacity	
1986	13.6	12.9	75	72
1987	14.3	13.5	77	73
1988	15.0	13.7	79	74
1989	15.7	14.0	81	75
1990	16.5	14.3	83	76

Transportation, Processing, and Marketing Impacts

The transportation, processing, and marketing industries accounting for over half of the agribusiness sector's economic activity would fare differently under the permanent legislation and no-support scenarios than the input industries. The higher prices and reduced marketings likely under permanent legislation would work to the disadvantage of businesses concerned more with the volume than the price of the products they handled. On the other hand, the lower prices and increased marketings likely with supports eliminated would increase business activity in these industries.

Differences in economic activity and employment between scenarios in these downstream operations would be most pronounced in the transportation subsector. With much of permanent legislation's expanded farm output stored either locally or on-farm, the volume of farm products moving through the transportation system to export or to domestic processors would be significantly lower than with supports eliminated. Using the index of utilization (domestic use plus exports) shown in table 26 as a general indicator, the difference in ton-miles between scenarios could be two-fifths or more. Conversely, with supports eliminated, the transportation sector could break the ton-mile record set in the late 1970's by 1987 and increase throughput 5 to 10 percent by 1990.

The reduced demand for transportation likely with the permanent support programs would add to longstanding pressures to contract the system or reduce service on less profitable routes. This pressure would most likely be concentrated in long-distance transportation of farm products between regions and to export. Demand for local transportation might actually increase under permanent legislation as producers moved their increased output to local storage facilities.

The rail, inland waterway, road, and port systems could be expanded in time to meet the significant ton-mile increase likely with increased marketings and exports under the no-support scenario. These systems were used at roughly two-thirds of capacity in 1982 and 1983, and railroad car and barge numbers appear to have increased in 1982 and 1983.

The processing and marketing subsectors would also experience more economic activity and employment with supports eliminated. Processors and marketers would experience lower input costs and increased demand for their products and services. While marketing margins tend to move with commodity prices, the full impact of a price rise or fall is seldom passed on to the consumer. As a result, processing and marketing margins would tend to be more favorable and returns 15 to 20 percent higher under the no-support scenario.

Given current capacity in these subsectors, the added demand for their services likely with supports eliminated would not be large enough to generate higher costs. Many of the industries in question would also be able to operate nearer full capacity than the 60- to 70-percent levels likely under permanent legislation or the 70- to 80-percent levels reported since 1981.

The downward pressure on the marketing and processing subsectors likely with permanent legislation would be less than the pressure likely on the transportation industry. This is due to the limited amount of processing and marketing involved in exports, a key source of the increased activity likely with supports eliminated and the drop in activity under permanent legislation. Permanent legislation pressure would still be great enough, however, to generate changes in the structure of the processing and marketing industries as they scaled back operations and growth expectations.

Table 26—Indices of production, utilization, export, and storage of farm products under the permanent legislation and no-support scenarios

Scenario	1977/78	1981/82	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91
					1983 = 100					
Production:										
Permanent legislation	128.7	161.0	100.0	158.0	156.8	166.0	170.0	172.5	176.7	177.6
No supports	128.7	161.0	100.0	158.0	156.8	163.9	161.7	163.0	167.3	171.4
Storage:										
Permanent legislation	109.5	249.2	100.0	114.8	183.9	227.4	293.3	363.1	431.1	501.4
No supports	109.5	249.2	100.0	114.8	183.9	176.9	165.1	151.3	142.1	137.5
Exports:										
Permanent legislation	93.0	114.8	100.0	103.5	110.7	108.8	113.1	113.8	116.6	119.3
No supports	93.0	114.8	100.0	103.5	110.7	123.5	128.4	131.9	135.5	139.3
Utilization: 1/										
Permanent legislation	90.9	104.1	100.0	103.7	110.7	108.2	110.8	112.0	113.7	115.5
No supports	90.9	104.1	100.0	103.7	110.7	116.7	119.7	121.5	123.7	125.9

1/ Utilization includes exports and domestic use but excludes storage.

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Storage would not be a problem under the no-support scenario but could become a critical concern with a reversion to permanent legislation. Reverting to permanent legislation could increase the grain carryover fivefold from 1983/84 levels to possibly 15 billion bushels by 1990/91. Although total storage capacity was estimated at over 18 billion bushels in 1982, added capacity would be required to handle both ongoing storage needs and the peak seasonal needs associated with harvest. Most of the increase in carryover stocks would come after 1986/87 and allow time for the construction of additional facilities. The added storage activity under permanent legislation would not be sufficient, however, to offset losses in transportation, processing, and marketing. Hence, activity in these industries as a group would be greater with no supports than with permanent legislation.

Rural Development Impacts

The increasingly diverse mix of activities underway in nonmetropolitan areas would limit the impact of a decision to revert to permanent legislation or operate without supports on rural development. Jobs and incomes in the 2,500 nonmetropolitan counties as a group would differ as little as 5 percent between scenarios, with the permanent support programs working to accelerate, and the no-support program working to slow, economic growth.

However, differences between scenarios would be significantly greater in the 700 counties most dependent on agriculture. These counties are heavily concentrated in the Plains and western Corn Belt (North Dakota, South Dakota, Iowa, Kansas, and Nebraska), and would experience faster growth in income and employment with permanent legislation in place but would face serious adjustment problems if supports were eliminated. The no-support adjustment would be even more serious for the 200 counties in this group heavily dependent on Federal farm program payments to supplement their agriculture earnings.

Diminishing Role of Agriculture

Agriculture's role in the rural economy has declined over the last 3 decades. About 10 percent of the $320 billion in income reported for nonmetropolitan areas at the start of the 1980's was generated in the farm sector. This compares with more than twice this share as recently as 1960. Of the 30 million persons employed in nonmetropolitan areas, less than 8 percent were employed in agriculture defined broadly to include forestry and fisheries (table 27). While comparable data are not available for the agribusiness sector, the information available suggests the same pattern of declining importance in the rural economy.

However, agriculture continues to be a major source of income and employment in roughly 700 nonmetropolitan counties. Farming in these counties contributed 20 percent or more of total labor and proprietor income from 1975 through 1979. 5/ Some of these farming-dependent counties depended on agriculture for as much as 70 percent of their income. The limited information available suggests that service and industry activities in these counties also tends to be dominated by agribusiness establishments.

5/ In 1950, over 2,000 counties received 20 percent or more of labor and proprietor income from farming, illustrating the decline in the importance of farming as an economic base in most rural areas.

These counties have typically experienced low rates of economic growth and high rates of population decline for decades and are heavily concentrated in the western edge of the Corn Belt and in the Plains States. Smaller concentrations can also be found in the Mississippi Delta, the southeastern Coastal Plains, and in the Mountain States. The factors shown in table 28 suggest that these counties could have a hard time adjusting to reduced supports. Income from agriculture ranges from 23 to 46 percent, while declining or slowly growing population and low population density limit opportunities outside agriculture. These factors are reflected in the relatively small number of farmers who work off farms more than 100 days per year despite combined farm and off-farm incomes well below the national

Table 27--Structure of employment in metropolitan and nonmetropolitan areas, 1982 1/

Item	United States		Metro		Nonmetro	
	1,000	Percent	1,000	Percent	1,000	Percent
Total employed	99,524	100.0	69,192	100.0	30,335	100.0
Total wage and salary workers	89,965	90.4	63,983	92.5	25,986	85.7
Agriculture	1,549	1.6	577	.8	973	3.2
Mining	989	1.0	468	.7	521	1.7
Construction	4,134	4.2	2,812	4.1	1,323	4.4
Manufacturing	19,756	19.9	13,645	19.7	6,111	20.1
Transportation, communication, and public utilities	5,408	5.4	3,960	5.7	1,449	4.8
Wholesale and retail trade	18,596	18.7	13,405	19.4	5,191	17.1
Finance, insurance, and real estate	5,631	5.7	4,541	6.6	1,090	3.6
Private household workers	1,207	1.2	778	1.1	429	1.4
Services	17,179	17.3	13,325	19.3	3,854	12.7
Government	15,516	15.6	10,472	15.1	5,045	16.6
Self-employed	8,898	8.9	4,937	7.1	3,961	13.1
Agriculture	1,636	1.6	383	.6	1,253	4.1
Nonagricultural	7,262	7.3	4,554	6.6	2,708	8.9
Unpaid family	662	.7	274	.4	388	1.3
Agriculture	261	.3	47	.1	213	.7
Nonagricultural	401	.4	226	.3	174	.6

1/ Totals may not add due to rounding.

average. While not the only counties likely to be affected by changes in support policies, farming-dependent counties would be the most seriously affected.

Federal Outlays to Farming-Dependent Counties

The sharpest adjustments to changes in support programs would occur in the 200 counties among these 700 farming-dependent counties that rely heavily not only on agriculture but on Federal farm program payments as well (table 29). Roughly 200 of the 700 counties most dependent on agriculture were also heavily dependent on Federal farm program payments. The 200 counties in question received an average of $422 per capita in Federal outlays for program commodities at the start of the decade. This $422 per capita represented as much as one-quarter of per capita income in the most dependent counties. These counties are even more heavily concentrated in the Plains States and western Corn Belt. The Dakotas, Iowa, Kansas, and Nebraska are among the States with the largest concentrations.

INTERNATIONAL TRADE IMPACTS

World agricultural trade and U.S. farm exports over the remainder of the decade are likely to be shaped to a large extent by the market forces summarized in the assumptions sections of this report. Growth in world demand for and trade in farm products was assumed to recover from the slowdown of the early 1980's as the decade progressed, but not to return to the unusually fast pace of the 1970's. Should the value of the dollar weaken somewhat but continue high by historical standards as assumed here, the U.S. competitive position in the market would continue weak. In this environment, recouping the export losses suffered since 1981 could take to the end of the decade.

Table 28--Farming-dependent counties arrayed into thirds by selected variable depicting adjustment potential

| Selected variable | Specialized agriculture counties 1/ | | | | All nonmetropolitan counties |
	Top third	Middle third	Bottom third	All	
			Percent		
Proportion of labor and proprietor income from agriculture, 1975-79	46	32	23	34	14.6
Population change, 1970-80	-.6	5.9	9.1	4.8	14.6
Population density per square mile, 1980 population	10	19	25	18	42.0
Proportion of farmers who worked off the farm 100 days or more, 1978	25	30	35	30	41.0

1/ Nonmetro counties in which labor and proprietor income from agriculture was 20 percent or more for 1975-79; 702 of the 2,443 nonmetro counties in the contiguous 48 States met this criterion.

The farm support programs adopted in 1985 are not likely to change this basic outlook significantly. They could work, however, through their impacts on export prices and the international trade policy environment to strengthen or weaken the pace of growth in world trade and the recovery in U.S. exports.

Export Price and Trade Policy Effects

The most immediate effect of adopting either of the support scenarios analyzed here on world trade and U.S. exports would be through changes in commodity prices. Differences in domestic U.S. producer prices would be passed through the marketing system and reflected in U.S. export prices and ultimately in world market prices. Table 30 suggests a 10- to 20-percent difference in export prices for feed grains and oilseeds and an even wider difference in cotton prices between the scenarios.

The shift in U.S. trade policy implied in a decision to eliminate supports or to revert to permanent support programs would eventually have as pronounced an impact on trade as differences in export prices. Given the direct link between U.S. and world market prices, reverting to the permanent support programs would commit the United States to maintaining not only high U.S. but high world market prices as well. USDA's open-ended nonrecourse loan programs would operate to raise or lower CCC stocks and U.S. exports as needed to balance world export supply and import demand at parity-linked price levels.

This U.S. adjustor role would serve the interests of the other exporters well. It would minimize market disruptions and any year-to-year adjustments

Table 29--Number of counties and average Federal outlay per capita: Nonmetro counties arrayed by average per capita outlay and specialization in agriculture, fiscal year 1980

Per capita Federal outlays for commodity agriculture 1/	Unit	Specialized agriculture counties 2/				All nonmetro counties
		Top third	Middle third	Bottom third	All	
Top third:						
Nonmetro counties	No.	207	164	119	490	815
Average outlay	Dol.	422	241	252	293	225
Middle third:						
Nonmetro counties	No.	23	61	99	183	814
Average outlay	Dol.	52	49	46	47	39
Bottom third:						
Nonmetro counties	No.	4	9	16	29	814
Average outlay	Dol.	16	10	9	10	7
All:						
Nonmetro counties:	No.	234	234	234	702	2,443
Average outlay	Dol.	362	172	140	193	56

1/ Federal outlays to nonmetro counties had a face value of $11 billion. After the loans and loan guarantees were adjusted to net grant equivalents, the value became $3.5 billion.
2/ Nonmetro counties in which labor and proprietor income from agriculture was 20 percent or more for 1975-79.

Table 30--U.S. export unit values under the permanent legislation and no-support scenarios

Item and unit	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1986-90 average
Permanent legislation:					Dollars				
Wheat (ton)	160	155	159	179	177	176	179	180	179
Corn (ton)	150	135	125	139	144	153	163	172	155
Soybeans (ton)	300	265	265	291	300	310	322	335	312
Cotton (ton)	1,625	1,560	1,485	2,140	2,230	2,405	2,585	2,770	2,426
Rice (ton)	400	390	385	465	480	495	510	530	496
Tobacco (lb.)	2.88	2.90	2.94	2.94	2.97	3.12	3.25	3.38	3.13
No supports:									
Wheat (ton)	160	155	159	135	142	150	157	161	149
Corn (ton)	150	135	125	118	128	132	138	144	132
Soybeans (ton)	300	265	265	257	267	279	293	303	280
Cotton (ton)	1,625	1,560	1,485	1,440	1,510	1,555	1,690	1,825	1,604
Rice (ton)	400	390	385	360	355	360	385	380	368
Tobacco (lb.)	2.88	2.90	2.94	2.48	2.31	2.40	2.48	2.40	2.41

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