

**Impacts of the Federal Agricultural Improvement  
and Reform Act of 1996 (FAIR Act)  
on the North Dakota Agricultural Economy**

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**Impacts of the Federal Agricultural Improvement  
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**Abstract**

The Federal Agriculture Improvement and Reform Act of 1996 (FAIR Act) decouples government farm subsidy payments from both price and production and provides farmers with nearly complete planting flexibility. Government spending under this act will be limited to \$35.63 billion for 1996-2002 period.

The net farm income for all six representative farms under the 1996 FAIR Act is projected to be higher than under the 1990 farm act early in the forecast period and lower after 1999 under the 1996 FAIR Act. Cropland prices are projected to fall 19.8% between 1996 and 2002 under the 1996 FAIR Act, while cropland prices are projected to fall 18.5% under the 1990 farm act. Cash rental rates are projected to follow cropland prices. Debt-to-asset ratios for most farms, although rising across the forecast period, do not reach levels that imperil credit-worthiness, but in the case of the low profit farm and small size farm the debt-to-asset ratios rise to a level that may imperil credit-worthiness on new borrowing.

**Key Words:** FAIR Act, net farm income, debt-to-asset ratio, cropland prices, land rental rates, farm operating expenses, capitalization rate

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## ***Highlights***

*The legislation ends the entitlement nature of farm program benefits and establishes an annual budget cap on benefits.*

*The legislation decouples government farm subsidy payments from both price and production, and provides farmers with almost complete planting flexibility.*

*The transition payments in 1996 are \$0.62 for wheat, \$0.21 for barley, and \$0.24 for corn per bushel on 85% of historical production. The payments decline gradually over the 7-year period. An additional payment for 1996 of \$0.25 for wheat and \$0.11 for barley, and for 1997 of \$0.13 for corn is made to assist the producers with the repayment of 1995 advanced deficiency payments.*

*Nonrecourse marketing assistance loans will be available to assist producers with the orderly marketing of crops. Maximum loan rates are \$1.89 per bushel for corn, \$2.58 per bushel for wheat, \$5.26 per bushel for soybeans, and \$0.093 per pound for sunflowers.*

*The Conservation Reserve Program (CRP) is capped at the current level of 36.4 million acres, and renewals of contracts will be at rental rates no higher than current market rental rates. Farmers would be able to withdraw land from participation without penalty and with 60 days notice after the fifth year of the contract.*

*The Export Enhancement Program (EEP) is maintained, but spending is capped at \$350 million in 1996, \$250 million in 1997, \$500 million in 1998, \$550 million in 1999, \$576 million in 2000, and \$478 million in both 2001 and 2002.*

*Domestic marketing allotments for sugar processors are eliminated. Support price is maintained at 22.9 cents/lb for refined beet sugar and 18 cents/lb for raw cane sugar.*

*The FAIR Act establishes a Commission to conduct a comprehensive review of the future of production agriculture in the United States and the appropriate role of the federal government in supporting production agriculture.*

*For all six representative farms, the net farm income is higher under the 1996 FAIR Act than under the 1990 farm act early in the forecast period. After 1999, net farm income is lower under the 1996 FAIR Act.*

*The debt-to-asset ratio is lower under the 1996 FAIR Act until 2000 for all six representative farms. From 2000 on, the debt-to-asset ratio is higher under the 1996 FAIR Act. Only in the case of the low profit representative farm does the debt-to-asset ratio rise above .60.*

*For the medium size representative farm, under the 1996 FAIR Act, cropland prices fall 19.8% from \$606 per acre in 1996 to \$486 in 2002. Under the 1990 farm act, cropland prices fall 18.5% from \$606 per acre in 1996 to \$494 in 2002.*

*For the average profit representative farm, under the 1996 FAIR Act, cropland prices fall 29.5% from \$549 per acre in 1996 to \$387 in 2002. Under the 1990 farm act, cropland prices fall 26.0% from \$549 per acre in 1996 to \$406 in 2002.*

*For the medium size representative farm, under the 1996 FAIR Act, cash rents rise 25.7% from \$35 per acre in 1996 to \$44 in 2002. Under the 1990 farm act, cash rents rise 17.1% from \$35 per acre in 1996 to \$41 in 2002.*

*For the average profit representative farm, under the 1996 FAIR Act, cash rents rise 5.4% from \$37 per acre in 1996 to \$39 in 2002. Under the 1990 farm act, cash rents rise initially but return to the 1996 level in 2002.*

*For wheat and barley, the net present value (NPV) of transition payments received over the life of the 7-year FAIR Act is greater than the NPV of projected deficiency payments under a continuation of the 1990 farm act over the same time period. For corn the NPV of payments received is greater under the 1990 farm act than under the FAIR Act. This implies the FAIR Act will provide more benefits to wheat and barley producers than would the 1990 farm act, while for corn producers, the 1990 farm act would provide more benefits than the FAIR Act.*

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**Introduction**

The Federal Agriculture Improvement and Reform Act of 1996 (FAIR Act) was signed into law by President Bill Clinton on April 4, 1996. It will limit spending for government commodity payments to \$35.63 billion between 1996 and 2002. It is projected to achieve a savings of \$13 billion compared to an extension of 1992 legislation over the 7-year period.

This legislation represents a departure from the supply management and income support strategies of farm programs since the 1930s. The legislation decouples government farm subsidy payments from both price and production and provides farmers with nearly complete planting flexibility. Producers will be able to plant whatever they wish on their program acres, except for fruits and vegetables. Annual benefits to program participants are determined in advance. The legislation substitutes an entitlement farm payment for a seven year fixed benefit contract.

The main objective of this analysis was to evaluate the impact of the 1996 FAIR Act on the net income and debt-to-asset ratios of different sizes and profit categories of representative farms developed from the North Dakota Farm and Ranch Business Management Association farm records. The secondary objective of this analysis was to evaluate the reaction of cropland prices and cash rental rates to the FAIR Act and to its predecessor legislation, the 1990 farm act, and to evaluate the reaction of net farm income to changes in the general price level of commodities.

**Summary of the Federal Agriculture Improvement  
and Reform Act of 1996 (FAIR Act)**

Four issues addressed in the 1996 FAIR Act are (1) authorization of binding production flexibility contracts (transition payments) between the United States and agricultural producers to support farming incomes while ensuring continued compliance with farm conservation and wetlands protection, (2) authorization of nonrecourse marketing assistance loans and loan deficiency payments for certain crops, (3) improvement of the operation of farm programs for milk, peanuts, and sugar, and (4) establishment of a commission to undertake a comprehensive review of past and future government involvement in production agriculture in the United States.

**Transition Payments**

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\*Koo and Duncan are professors, Taylor is research associate, and Aakre is an extension specialist in the Department of Agricultural Economics at North Dakota State University, Fargo.

Total production eligible for payment equals 85% of the historical crop acreage base times established program yield. Land on which an acreage report has been filed in at least 1 of the last 5 years will be eligible to receive transition payments. Land under an expiring Conservation Reserve Program (CRP) contract is also eligible. Producers are permitted to plant any crop on contract (base) acres except fruits and vegetables. Payments for production flexibility contracts (transition payments) are limited to \$40,000 per person, and the 3-entity<sup>1</sup> rule is continued in the 1996 FAIR Act. A producer may decline catastrophic risk protection and remain eligible to receive transition payments by waiving eligibility for disaster payments.

The FAIR Act authorizes yearly spending on farm payments. The total spending per year is allocated to each crop as follows, 46.22% for corn, 26.26% for wheat, 11.63% for upland cotton, 8.47% for rice, 5.11% for grain sorghum, 2.16% for barley, and 0.15% for oats. Table 1 presents spending for individual crops for production flexibility contracts for 1996-2002. The spending increases from \$5,570 million in 1996 to \$5,800 million in 1998. Spending then decreases to \$4,008 million by 2002. Table 2 shows the USDA estimated transition payments per bushel of corn, wheat, and barley under the 1996 FAIR Act. The net payments in 1996 are \$0.62 per bushel for wheat, \$0.21 per bushel for barley, and \$0.24 per bushel for corn. The payments decline gradually over the 7-year period. The gross wheat payment for 1996 is \$0.87 per bushel, which includes transition payments and the repayment of 1995 advanced deficiency payments of \$0.25 per bushel.

## **Marketing Loans**

Nonrecourse marketing loans will be available to assist producers with orderly crop marketing. Loan rates for corn, wheat, soybeans, sunflowers, and other minor oil seeds are determined by taking 85% of the 5-year moving average of past market prices, excluding the highest and lowest price years. The loan rate for other feed grains will be based on feed value compared to corn. Maximum national average loan rates are \$1.89 per bushel for corn, \$2.58 per bushel for wheat, \$5.26 per bushel for soybeans, and \$0.093 per pound for sunflowers. The secretary may reduce the formula loan rates for corn and wheat by up to 10%, depending on the ratio of ending stocks to total use for the marketing year. The minimum loan rates are \$4.92 per bushel for soybeans and \$0.087 per pound for sunflowers. The nonrecourse marketing loan program does provide a price floor for commodities and may provide some subsidy to producers if market prices fall below the loan rates. The payment limit on market loan gains and loan deficiency payments is \$75,000. Authority for the Farmer Owned Reserve is eliminated in the FAIR Act.

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<sup>1</sup>Each producer is eligible for a maximum of three separate farm contracts.

**Table 1. Authorized Spending For Production Flexibility  
Contracts Under the 1996 FAIR Act**

Fiscal					
<u>Year</u>	<u>Total</u>	<u>Wheat</u>	<u>Barley</u>	<u>Corn</u>	<u>Oats</u>
-----million dollars-----					
1996	5,570	1,463	120	2,574	8
1997	5,385	1,414	116	2,489	8
1998	5,800	1,523	125	2,681	9
1999	5,603	1,471	121	2,590	8
2000	5,130	1,347	111	2,371	8
2001	4,130	1,085	89	1,909	6
2002	<u>4,008</u>	<u>1,053</u>	<u>87</u>	<u>1,852</u>	<u>6</u>
<b>Total</b>	<b>35,626</b>	<b>9,356</b>	<b>769</b>	<b>16,466</b>	<b>47</b>

**Table 2. 1996 FAIR Act Transition  
Payments**

	<u>Wheat</u>	<u>Barley</u>	<u>Corn</u>
	-----cents/bu-----		
1996*	0.62	0.21	0.24
1997	0.61	0.25	0.33
1998	0.65	0.26	0.36
1999	0.63	0.24	0.35
2000	0.57	0.22	0.32
2001	0.46	0.18	0.26
2002	<u>0.45</u>	<u>0.17</u>	<u>0.25</u>

\*net payments after deducting  
repayments of 1995 advance  
deficiency payments.

## **Conservation**

The Conservation Reserve Program (CRP) is capped at the current level of 36.4 million acres. CRP funding is maintained, but renewals of contracts will be at rental rates no higher than current market rental rates. However, farmers holding CRP contracts would be able to withdraw land from participation in the program without penalty and with a 60-day notice to the government after the fifth year of the contract.

The FAIR Act requires that the secretary use the funds of the CCC to carry out the CRP and Wetlands Reserve Program (WRP). WRP shall not exceed 975 thousand acres. Enrollment into the program will be limited to 1/3 of the acres into permanent easements, 1/3 of the acres into 30-year easements, and 1/3 of the acres into restoration cost-share agreements.

## **Export Promotion**

The Export Enhancement Program (EEP) is maintained but spending is capped in the new farm act. The spending caps are \$350 million in 1996, \$250 million in 1997, \$500 million in 1998, \$550 million in 1999, \$576 million in 2000, and \$478 million in both 2001 and 2002.

## **Livestock Provisions**

The legislation eliminates authority for the Emergency Livestock Feed Program. The act gives the secretary the authority to collect fees to cover the cost of providing U.S. import quarantine and inspection services.

## **Credit**

Direct farm ownership loans will be provided to farmers and ranchers who have not received direct farm owners' loans in the past 10 years. The loans will be provided to acquire or enlarge a farm or ranch; make capital improvements to the farm or ranch; pay closing costs related to acquiring, enlarging, or improving a farm or ranch; or pay for activities to promote soil and water conservation practices. Loan guarantees of up to 90% for original loans and 95% for refinanced loans will be made to farmers and ranchers. Loans to beginning farmers will be guaranteed up to 95% of the loan.

Direct operating loans will be provided to farmers and ranchers who have not received direct farm operating loans in the past 6 years. The loans will be provided to reorganize a farm or ranch into a more profitable operation; to purchase livestock, poultry, or farm and ranch equipment; to purchase feed, seed, fertilizer, insecticide, or farm and ranch supplies; pay closing costs related to acquiring, enlarging, or improving a farm of ranch; or to pay for activities to

promote soil and water conservation practices. Guaranteed operating loans will be made for the same purposes.

### **Sugar Program**

Domestic marketing allotments for sugar processors are eliminated in the 1996 FAIR Act. Support price is maintained at 22.9 cents/lb for refined beet sugar and 18 cents/lb for raw cane sugar. The marketing assessment for beet sugar in 1996 is 1.1% of the raw cane sugar price, and will increase to 1.474% of the raw cane sugar price in 1997-2002. The marketing assessment for raw cane sugar in 1996 is 1.1794% of the raw cane sugar price, but will increase to 1.375% of the raw cane sugar price in 1997-2002. Recourse loans are available if tariff rate quota imports are less than 1.5 million tons. Nonrecourse loans are available when tariff rate quota imports exceed 1.5 million tons.

### **Dairy**

The dairy provisions underwent major reforms in the FAIR Act. Price supports are reduced \$0.15 per cwt annually and eliminated in four years, terminating in 1999. The price supports for milk producers are \$10.35 per cwt in 1996, \$10.20 per cwt in 1997, \$10.05 per cwt in 1998, and \$9.90 per cwt in 1999. Beginning in 2000, price supports will be replaced by recourse loans, to processors only, at the rate of \$9.90 per cwt. The interest rate for the loans will not be less than the rate that the Commodity Credit Corporation is charged by the United States Treasury. Milk marketing orders remained intact, but the number must be reduced from 33 to between 10 and 14 by 2000. The legislation designates California as a separate federal milk marketing order. Increased dairy exports are to be encouraged with the use of the Dairy Export Incentive Program.

### **Commission**

The FAIR Act establishes a commission to be appointed not later than October 1, 1997, to conduct a comprehensive review of the future of production agriculture in the United States and the appropriate role of the federal government in support of production agriculture.

### **Permanent Legislation**

The Agriculture Act of 1949 and permanent law provisions of the Agriculture Adjustment Act of 1938 are not eliminated but are suspended for the life of the 1996 legislation.



## Methodology

This analysis is based on the North Dakota Representative Farm Model which uses the Food and Agricultural Policy Research Institute (FAPRI) projections as an input. The model has 24 representative farms, six farms in each of four regions: the Red River Valley (RRV), North Central (NC), South Central (SC), and Western (West) (Figure 1). The farms in each region are representative of the average, high, and low profit farms and large, medium, and small size farms enrolled in the North Dakota Farm and Ranch Business Management Association. The representative farms are developed from the North Dakota Vocational Agriculture Department farm record system data provided by cooperating North Dakota farmers.

This study focuses on the effects of the 1996 FAIR Act on net farm income, debt-to-asset ratios, cash rent, and cropland prices for representative farms producing five major crops: wheat, barley, corn, soybeans, and sunflowers. The representative farms average 1,200 acres of cropland and 410 acres of pasture. The average size of the representative farms in the study are about 50% larger than the state's average size farm, as reported by National Agricultural Statistical Service (NASS). A reason for this difference is the state average size farm includes all farms with \$1,000 or more sales; therefore, all hobby farms, farms operated as part of a combined larger farm, farms operated by semi-retired persons, and commercial farms are included. The farms used in this study represent primarily commercial farms. The average farm size in North Dakota as reported in NASS, is 796 crop acres. About 43% of total farms in North Dakota have a farm size less than 1,000 crop acres, while the balance of the farms have more than 1,000 cropland acres. In addition, small farms (less than 200 acres) account for 25% of total farms in North Dakota and only 3% of total land farmed.

Table 3 shows the characteristics of the representative North Dakota farms. The average profit representative farm is an average of all farms in the Farm and Ranch Business Management Records System in each production region. The high profit representative farm is an average of farms in the top 20% of farm profitability for each production region. The low profit representative farm is an average of farms in the low 20% of farm profitability for each production region.

The large farm is an average of the largest 25% of farms in cropland acres for each production region in cropland acres. The small representative farm is an average of the smallest 25% of the farms for each production region. The average large farm varied between 2,170 cropland acres in the NC region and 2,523 cropland acres in the SC. The average medium size farm varied between 1,007 cropland acres in the West region and 1,333 cropland acres in the NC region. The average small farm has 373 cropland acres in the West region and 669 cropland acres in the NC region.

Figure 1.

**Table 3. Characteristics of Representative North Dakota Farms, 1994**

	Size			Profit		
	Large	Medium	Small	High	Average	Low
	-----acres-----					
Total cropland	2358	1182	475	1636	1200	995
Spring Wheat	1043	489	201	742	544	449
Durum Wheat	352	182	88	131	90	54
Barley	245	152	57	221	165	140
Corn	50	44	25	42	33	42
Sunflowers	193	91	27	88	66	56
Soybeans	118	61	13	90	70	84

The basic structure of the model is shown in Figure 2. Alternative farm policies affect net farm income for the representative farms. Changes in return to cropland, given the market-determined capitalization rate, change land prices. Changes in land prices affect cash rental rates farmers are willing to pay on land used to produce crops. Changes in land price and cash rental in turn affect net farm income through adjustments in farm expenses. These changes affect the debt-to-asset ratios of the representative farms.

The model consists of two components: revenues and costs. The revenue component represents the total income from the farm operation, including farm program payments from the federal government. The cost components include all expenses incurred in producing the crop and livestock.

### **Net Farm Income**

Net farm income is calculated by subtracting total crop and livestock expenses from total farm income. Crop and livestock expenses consist of direct costs, including seed, fertilizer, fuel, repairs, feed, supplies, feeder livestock purchases, and hired labor and indirect costs, including machinery depreciation, overhead such as insurance and licenses, land taxes, and land rent or interest on real estate debt. Total farm income is the sum of cash receipts from crop and livestock enterprises, government payments, CRP payments, custom work, patronage dividends, insurance income, and miscellaneous income. Inventory changes, accounts receivable, accounts payable, and prepaid expenses and supplies are assumed to be constant from year to year. Cash receipts are based on predicted cash prices and yields in North Dakota. Cash prices received by farmers are estimated from North Dakota price equations which were estimated on the basis of the historical relationships between North Dakota prices and U.S. export prices of the commodities. Annual data from 1974 to 1993 were used to estimate price equations.

Figure 2.

FAPRI projected prices of agricultural commodities are used in the North Dakota price equations to predict cash prices of agricultural commodities produced in North Dakota for 1996-2002, Table 4. Figure 3 shows the estimated prices for HRS wheat, durum wheat, corn, and malting barley; and Figure 4 shows price movements of soybeans and sunflowers. Since supply of the crop is sensitive to the prices of the crops, high prices in 1996 will increase supply of the crops, in subsequent years, under normal weather conditions, causing gradual price decline in prices for the forecast period.

Regional North Dakota yield equations were estimated from historical yield data reported by NASS from 1974 to 1993. The estimated equations were used to forecast changes in crop yield trends for future years. A dummy variable was used to compensate for two drought years: 1980 and 1988.

**Table 4. North Dakota Baseline Price Estimates From the Projected FAPRI Baseline Price**

	Spring Wheat	Durum Wheat	Malt Barley	Feed Barley	Soybean	Corn	Sunflowers
	-----\$/bu-----						\$/cwt
1995	4.52	5.40	2.95	2.33	6.33	2.91	12.05
1996	3.87	4.45	2.25	1.84	6.25	2.60	12.02
1997	3.45	3.84	2.30	1.88	6.03	2.34	11.73
1998	3.51	3.93	2.12	1.75	5.56	2.20	10.94
1999	3.51	3.93	2.00	1.67	5.41	2.13	10.77
2000	3.53	3.96	2.03	1.69	5.38	2.18	10.85
2001	3.33	3.65	2.12	1.75	5.51	2.22	11.24
2002	3.31	3.62	2.08	1.72	5.67	2.31	11.69

### Cropland Prices

Financial data from average representative farms for each region are used to calculate a dollar return to land. To do this, all production expenses for the crops, including depreciation, land taxes, a labor charge for unpaid family labor, net return from a livestock enterprise, and a management fee equivalent to that charged by bank trust departments for management of share-rented farms, are subtracted from gross farm income. To the remaining balance, interest on real estate debt is added back because the return to land is not affected by ownership of the land. This figure is used as the return allocated to cropland. The return allocated to cropland is divided by the market price for cropland obtained from NASS to determine the implicit capitalization rate for land.

Figures 3 and 4.

In subsequent forecast years, this capitalization rate is applied to cropland income per acre to determine cropland value for land utilized to produce wheat, corn, soybeans, barley, and sunflowers. Changes in income allocated to cropland changes cropland prices, based on a 4-year weighted average of cropland income. The calculated price of cropland can be defined as the amount the average profit or medium size representative farms are willing to pay for the cropland on which to produce wheat, barley, corn, soybeans, and sunflowers.

### **Debt-to-asset Ratio**

The debt-to-asset ratio is calculated by dividing total outstanding farm debt by total farm assets. Total debt includes debt on land, intermediate debt, and short-term debt. Total assets include price of farmland times acres of farmland and the depreciated value of farm equipment and supplies, livestock, and liquid assets. Value of farm equipment, supplies, and livestock is assumed to be constant over the forecast period.

### **Cash Rent**

The market-determined implicit capitalization rate is used to calculate cropland prices. Income attributable to cropland determines cropland prices based on a weighted 4-year moving average. A 3-year moving average of cropland prices determines cash rental rates charged for rented cropland based on the market-determined relationship of cropland prices to cash rental rates.

### **Assumptions**

This analysis is based of the following assumptions:

1. Net farm income from livestock operations and production of other crops, including potatoes and canola, remains constant during the period.
2. The size of all farm enterprises remain constant.
3. The farm equipment stock remains constant, indicating that depreciation allowances are reinvested in farm equipment.
4. Inventory, accounts receivable, accounts payable, and prepaid expenses and supplies are constant from year to year.
5. All farms within a region have the same crop mix.
6. All farms within a region receive the same price for commodities.
7. Yield differentials that existed in 1993 continue throughout the forecast period for high, average, and low profit farms and large, medium, and small size farms.

## Results

The results of this study are divided into three sections: effects on representative farms by size, effects on representative farms by profitability, and price effects. Net farm income, debt-to-asset ratio, land prices, and rental rates under the 1996 FAIR Act are compared to those under a continuation of the 1990 farm act.

### **Representative Farm by Size**

Table 5 presents the net farm income for the large, medium, and small size representative farms. For all farms under both farm acts, the net farm income falls over the forecast period. Under the 1990 farm act, net farm income falls 12.6% from \$161 thousand in 1996 to \$109 thousand in 2002 for the large size farm, 8.7% from \$98 thousand in 1996 to \$73 in 2002 for the medium size farm, and 17.4% from \$46 thousand in 1996 to \$32 thousand in 2002 for the small size farms. Under the 1996 FAIR Act, net farm income falls 42.3% from \$161 thousand in 1996 to \$89 thousand in 2002 for the large size farm, 34.4% from \$98 thousand in 1996 to \$65 thousand in 2002 for the medium size farm, and 37.2% from \$46 thousand in 1996 to \$29 thousand in 2002 for the small size farms. The 7-year average net farm incomes for 1996-2002 period, are similar under both farm acts. However, the 1996 FAIR Act provides higher net farm income during the initial few years, offset by lower net income later in the forecast period. Net farm income under the 1990 farm act starts the forecast period at a substantially lower level and declines more slowly over the forecast period. This is mainly because the prices of the crops are projected to be high at the beginning of the forecast period and decline gradually. With high commodity prices, transition payments under the 1996 FAIR Act are higher than the deficiency payments under the 1990 farm act, indicating that farmers initially receive more revenue under the FAIR Act. On the other hand, as commodity prices decline, farmers receive more revenue under the 1990 farm act.

**Table 5. State Average Net Farm Income for Different Size Representative Farms Under the 1990 Farm Act and 1996 FAIR Act**

	<u>1990 Farm Act</u>			<u>1996 FAIR Act</u>		
	<u>Large</u>	<u>Medium</u>	<u>Small</u>	<u>Large</u>	<u>Medium</u>	<u>Small</u>
	-----1000 dollars-----					
1995	161	98	46	161	98	46
1996	125	80	39	151	92	43
1997	117	77	37	124	80	38
1998	108	73	35	114	75	36
1999	102	70	33	104	71	33
2000	104	71	33	101	70	32
2001	107	72	33	89	65	30
2002	109	73	32	89	65	29
1996-2002						
<b>Ave</b>	<b>110</b>	<b>74</b>	<b>35</b>	<b>110</b>	<b>74</b>	<b>34</b>

Figures 5 through 7 compare the net farm income for the large, medium, and small size representative farms. For all three farms, the net farm income is higher under the 1996 FAIR Act

than under the 1990 farm act early in the forecast period. After 1999, the net farm income is lower under the 1996 FAIR Act.

Table 6 presents the debt-to-asset ratios for the representative farms. Under the 1990 farm act, the debt-to-asset ratio rises from 0.31 in 1996 to 0.36 in 2002 for the large size farm, 0.34 in 1996 to 0.39 in 2002 for the medium size farm, and 0.44 in 1996 to 0.50 in 2002 for the small size farm. Under the 1996 FAIR Act, the debt-to-asset ratio rises from 0.31 in 1996 to 0.38 in 2002 for the large size farm, from 0.34 in 1996 to 0.41 in 2002 for the medium size farm, and from 0.44 in 1996 to 0.51 in 2002 for the small size farm.

Figures 8 through 10 show the debt-to-asset ratios for the large, medium, and small size representative farms. The debt-to-asset ratios are lower under the 1996 FAIR Act for all three representative farms early in the forecast period, because of the higher net income. After 2000, the debt-to-assets ratio under the 1996 FAIR Act are higher than under the 1990 farm act. Only for the small size representative farm does the debt-to-asset ratio rise above 0.50.

Table 7 presents cropland prices for the medium size representative farm. For all regions, the 7-year average cropland prices, 1996-2002, are higher under the 1996 FAIR Act than under 1990 farm act. Under the 1990 farm act, cropland prices fall 18.5% from \$606 per acre in 1996 to \$494 in 2002. Under the 1996 FAIR Act, cropland prices fall 19.8% from \$606 per acre in 1996 to \$486 in 2002. Figure 11 shows the average price for cropland that the medium size representative farm would be willing pay. Under the 1990 farm act, cropland prices fall throughout the forecast period. Under the 1996 FAIR Act, cropland prices increase initially in 1997 but fall throughout the remaining years of the forecast period.

Table 8 presents the cash rents that the medium size representative farm would be willing to pay for cropland. The cash rents under the 1996 FAIR Act are higher in all regions of the state. Cash rents under the 1996 FAIR Act are higher as a result of the higher net farm income early in the forecast period. Under the 1990 farm act, cash rents rise 17.1% from \$35 per acre in 1996 to \$41 in 2002. Under the 1996 FAIR Act, cash rent rises 25.7% from \$35 per acre in 1996 to \$44 in 2002. Figure 12 shows the cash rents that the medium size representative would be willing to pay over the forecast period.



Figures 5, 6, 7.

Table 6. State Average Debt-to-asset Ratios for Different Size Representative Farms Under the 1990 Farm Act and 1996 FAIR Act

	<u>1990 Farm Act</u>			<u>1996 FAIR Act</u>		
	<u>Large</u>	<u>Med</u>	<u>Small</u>	<u>Large</u>	<u>Med</u>	<u>Small</u>
1995	0.31	0.34	0.44	0.31	0.34	0.44
1996	0.32	0.35	0.45	0.30	0.33	0.43
1997	0.33	0.35	0.46	0.31	0.34	0.44
1998	0.34	0.36	0.47	0.32	0.35	0.45
1999	0.35	0.37	0.48	0.33	0.36	0.46
2000	0.35	0.38	0.48	0.34	0.37	0.47
2001	0.36	0.38	0.49	0.36	0.39	0.50
2002	0.36	0.39	0.50	0.38	0.41	0.51
1996-2002						
<u>Ave</u>	<u>0.34</u>	<u>0.37</u>	<u>0.47</u>	<u>0.33</u>	<u>0.36</u>	<u>0.47</u>

Table 7. North Dakota Land Prices for Different Size Representative Farms Under the 1990 Farm Act and 1996 FAIR Act

	<u>1990 Farm Act</u>					<u>1996 FAIR Act</u>				
	<u>RRV</u>	<u>NC</u>	<u>SC</u>	<u>WEST</u>	<u>Ave</u>	<u>RRV</u>	<u>NC</u>	<u>SC</u>	<u>WEST</u>	<u>Ave</u>
	-----dollars per acre-----									
1995	829	408	395	287	480	829	408	395	287	480
1996	979	501	518	425	606	979	501	518	425	606
1997	990	489	512	398	597	1,046	526	575	495	660
1998	985	475	501	374	584	1,029	507	549	455	635
1999	963	460	478	346	562	1,001	492	526	433	613
2000	924	441	444	307	529	946	464	482	386	570
2001	908	439	429	292	517	914	450	454	355	543
2002	843	437	421	276	494	817	426	412	290	486
1996-2002										
<u>Ave</u>	<u>942</u>	<u>463</u>	<u>472</u>	<u>345</u>	<u>556</u>	<u>962</u>	<u>481</u>	<u>502</u>	<u>406</u>	<u>588</u>

Figures 8, 9, 10

Figures 11, 12

**Table 8. Cash Rent for Medium Size Representative Farms Under the 1990 Farm Act and 1996 FAIR Act**

	1990 Farm Act					1996 FAIR Act				
	RRV	NC	SC	WEST	State	RRV	NC	SC	WEST	State
	-----dollars per acre-----									
1995	54	24	29	27	33	54	24	29	27	33
1996	55	25	31	28	35	55	25	31	28	35
1997	59	27	35	34	39	59	27	35	34	39
1998	64	30	39	38	43	65	31	41	42	45
1999	68	31	42	41	46	70	33	45	48	49
2000	67	30	41	39	44	70	33	45	48	49
2001	66	29	39	36	42	68	31	43	44	47
2002	64	29	37	33	41	66	30	40	41	44
1996-2002										
<b>Ave</b>	<b>63</b>	<b>29</b>	<b>38</b>	<b>36</b>	<b>41</b>	<b>65</b>	<b>30</b>	<b>40</b>	<b>41</b>	<b>44</b>

### Representative Farm by Profitability

Table 9 presents the net farm income for the high, average, and low profit representative farms. For all farms under both farm acts, net farm income falls over the forecast period. Under the 1990 farm act, net farm income falls 7.5% from \$107 thousand in 1996 to \$99 thousand in 2002 for the high profit farm and 14.6% from \$62 thousand in 1996 to \$53 in 2002 for the average profit farm. Under the 1996 FAIR Act, net farm income falls 32.9% from \$127 thousand in 1996 to \$85 thousand in 2002 for the high profit farm and 41.3% from \$74 thousand in 1996 to \$43 in 2002 for the average profit farm. Under both farm acts, the net farm profit for the low profit farm becomes negative. The 7-year average net farm incomes for 1996-2002 for the two farm acts are similar. The 1996 FAIR Act provides higher net farm income during the initial few years, but provides lower net income later in the forecast period.

Figures 13 through 15 show the net farm income for the high, average, and low profit representative farms. For all three farms, the net farm income under the 1996 FAIR Act is higher than the 1990 farm act early in the forecast period. After 1999, the net farm income is lower for the 1996 FAIR Act. This is mainly because the prices of the crops decline gradually over the forecast period.

Figures 13, 14, 15

**Table 9. State Average Net Farm Income for Different Profit Representative Farms Under 1990 Farm Act and 1996 FAIR Act**

	<u>1990 Farm Act</u>			<u>1996 FAIR Act</u>		
	<u>High</u>	<u>Ave</u>	<u>Low</u>	<u>High</u>	<u>Ave</u>	<u>Low</u>
	-----1000 dollars-----					
1995	135	80	24	135	80	24
1996	107	62	11	127	74	19
1997	104	58	7	108	61	9
1998	98	54	2	102	56	3
1999	95	52	-2	95	51	-3
2000	96	52	-2	93	50	-5
2001	98	53	-2	85	44	-9
2002	99	53	-3	85	43	-10
1996-2002						
<b>Ave</b>	<b>99</b>	<b>55</b>	<b>1</b>	<b>99</b>	<b>54</b>	<b>1</b>

Table 10 presents the debt-to-asset ratios for the representative farms. Under the 1990 farm act, the debt-to-asset ratios rise from 0.28 in 1996 to 0.31 in 2002 for the high profit farm, from 0.38 in 1996 to 0.43 in 2002 for the average profit farm, and from 0.52 in 1996 to 0.59 in 2002 for the low profit farm. Under the 1996 FAIR Act, the debt-to-asset ratios rise from 0.26 in 1996 to 0.33 in 2002 for the high profit farm, from 0.36 in 1996 to 0.46 in 2002 for the average profit farm, and from 0.50 in 1996 to 0.62 in 2002 for the low profit farm.

**Table 10. State Average Debt-to-asset Ratio for Different Profit Representative Farms Under the 1990 Farm Act and 1996 FAIR Act**

	<u>1990 Farm Act</u>			<u>1996 FAIR Act</u>		
	<u>High</u>	<u>Ave</u>	<u>Low</u>	<u>High</u>	<u>Ave</u>	<u>Low</u>
1995	0.26	0.36	0.50	0.26	0.36	0.50
1996	0.28	0.38	0.52	0.26	0.36	0.50
1997	0.28	0.39	0.53	0.27	0.37	0.52
1998	0.29	0.40	0.55	0.28	0.38	0.53
1999	0.30	0.41	0.57	0.29	0.40	0.55
2000	0.30	0.42	0.58	0.30	0.41	0.57
2001	0.31	0.43	0.58	0.31	0.44	0.60
2002	0.31	0.43	0.59	0.33	0.46	0.62
1996-2002						
<b>Ave</b>	<b>0.29</b>	<b>0.41</b>	<b>0.56</b>	<b>0.29</b>	<b>0.40</b>	<b>0.56</b>

Figures 16 to 18 shows the debt-to-asset ratios for the high, average, and low profit representative farms. The debt-to-asset ratios are lower under the 1996 FAIR Act for all three

representative farms early in the forecast period because of the higher net income. After 2000, the debt-to-asset ratios under the 1996 FAIR Act are higher than under the 1990 farm act. Only in the case of the small size representative farm does the debt-to-asset ratio rise above 0.60.

Table 11 presents the cropland prices for the average profit representative farm. Over the forecast period, the 7-year average cropland prices, 1996-2002, for all regions of the state cropland prices are higher under the 1996 FAIR Act than under the 1990 farm act. Under the 1990 farm act, cropland prices fall 26.0% from \$549 per acre in 1996 to \$406 in 2002. Under the 1996 FAIR Act, cropland prices fall 29.5% from \$549 per acre in 1996 to \$387 in 2002. Figure 19 shows the average prices for cropland that the average profit representative farm would be willing pay. Under the 1990 farm act, cropland prices fall throughout the forecast period. Under the 1996 FAIR Act, cropland prices increase initially in 1997 but fall throughout the remaining years.

Table 12 presents the cash rents that the average profit representative farm would be willing to pay for cropland. The cash rents under the 1996 FAIR Act are higher in all regions of the state. Cash rents under the 1996 FAIR Act are higher because of the higher net farm income early in the forecast period. Under the 1990 farm act, cash rents initially increase, but later in the forecast period decline to the price level of 1996. Under the 1996 FAIR Act, cash rents rise 5.4% from \$37 per acre in 1996 to \$39 in 2002. Figure 20 shows the cash rent that the average profit representative farm would be willing to pay during the forecast period. Cash rents rise early in the forecast period, but fall toward the end of the period.

Table 11. North Dakota Land Prices for Average Profit Representative Farms Under the 1990 Farm Act and 1996 FAIR Act

	1990 Farm Act					1996 FAIR Act				
	RRV	NC	SC	WEST	State Ave	RRV	NC	SC	WEST	State Ave
	-----dollars per acre-----									
1995	736	368	400	266	442	736	368	400	265	442
1996	904	446	523	325	549	904	446	523	324	549
1997	885	427	494	308	529	948	459	551	336	573
1998	878	416	478	296	517	937	448	533	322	560
1999	834	401	446	279	490	885	432	501	305	531
2000	762	380	401	257	450	790	403	443	278	479
2001	702	374	377	246	425	704	385	401	258	437
2002	663	368	360	232	406	621	357	343	226	387
1996-2002										
Ave	804	402	440	278	481	827	419	471	293	502

Table 12. Cash Rent for Average Profit Representative Farms Under the 1990 Farm Act and 1996 FAIR Act

	1990 Farm Act					1996 FAIR Act				
	RRV	NC	SC	WEST	State	RRV	NC	SC	WEST	State
	-----dollars per acre-----									
1995	55	29	33	31	37	55	29	33	31	37
1996	54	29	35	31	37	54	29	35	31	37
1997	57	31	40	34	41	57	31	40	34	41
1998	59	33	44	37	43	61	34	46	38	45
1999	62	34	42	35	43	65	36	47	38	47
2000	61	33	40	34	42	65	36	45	37	45
2001	58	32	37	31	39	61	34	41	34	43
2002	54	31	34	29	37	56	32	36	31	39
1996-2002										
Ave	58	32	39	33	40	60	33	41	35	42



Figures 16, 17, 18

Figures 19, 20

## Price Effects

Under the 1990 farm act, the estimated deficiency payment over the forecast period for wheat totals \$2.96 per bushel; for barley, \$1.38 per bushel; and for corn \$2.78 per bushel. The net present values of the streams of deficiency payments are \$1.95, \$0.90, and \$1.86 per bushel, respectively. Net present value is the value of a series of future cash-flow values, discounted at a fixed periodic interest rate. The interest rate used for the calculation of net present value is 10%. Under the 1996 FAIR Act, the estimated transition payments over the forecast period for wheat totals \$3.99 per bushel; for barley, \$1.53 per bushel; and for corn, \$2.11 per bushel. The net present values of the transition payments are for wheat, barley, and corn, \$2.83, \$1.08, and \$1.47 per bushel, respectively. For both wheat and barley, the net present values of the stream of transition payments are greater than the deficiency payments. The net present value of the stream of transition payments for corn is less than for deficiency payments. This implies that wheat and barley producers will receive more benefits under the 1996 FAIR Act than they would have under an extension of the 1990 farm act. Corn producers will receive less benefits under the 1996 FAIR Act than under the 1990 farm act.

Figures 21 through 23 show the total per bushel estimated revenue for spring wheat, barley, and corn. The 1990 farm act assumes continuing deficiency payments based on current target prices. The transition payments are based on the 1996 FAIR Act. For both wheat and barley, the revenues per bushel are higher under the 1996 FAIR Act early in the forecast period. For corn, the total revenue under the 1996 FAIR Act is higher than under the 1990 farm act in 1996. The main reason for this is that the deficiency payments under the 1990 farm act increase as market prices of the crops decline while the transition payments under the 1996 FAIR Act are pre-determined in the legislation.

Figures 24 through 26 show the effects of commodity price changes on net farm income for the different size representative farms. 1996 prices were used as the base from which the various percent changes in commodity prices were applied. The steeper the line, the more sensitive net income was to changes in commodity prices. In all farms, net farm income was more sensitive to commodity price changes under the 1996 FAIR Act because transition payments are fixed and not subject to changes in commodity prices.

Figures 27 through 29 show the effects of commodity price changes on net farm income for the different profit representative farms. 1996 prices were used as the base from which the various percent changes in commodity prices were applied. The steeper the line, the more sensitive net income was to changes in commodity prices. For all farms, net farm income was more sensitive to commodity price changes under the 1996 FAIR Act because transition payments are fixed and not subject to changes in commodity prices.

Figure 21

Figure 22

Figure 23

Fig. 24, 25, 26

Fig. 27, 28, 29



## **Implications and Conclusions**

Farmers, agribusinesses, the federal government, and consumers are trying a fundamentally different approach to farm programs over the next 7 years. Under the FAIR Act, the federal government will no longer manage supplies of program crop commodities through acreage bases and planting controls. Farm subsidy levels will be fixed through a seven year contract, a sharp change from the entitlement nature of past programs in which government spending was a function of market price levels and farmer eligibility for program benefits.

Farmers will depend more on the marketplace for signals on crops to plant and when to market those crops. To ease the adjustment process, the federal government will provide \$35.6 billion in transition payments to farmers over the next 7 years. The government will aggressively seek to open export markets for farm products, especially those for processed products where world demand is growing rapidly. The government is also making its dairy support program more market oriented.

It is uncertain what farm programs will be continued at the end of the 7-year FAIR Act. However, annual farm program spending will still top \$4 billion per year, and permanent farm program legislation embodying high loan rates and very tight production controls is only suspended until the end of the 1996 FAIR Act.

Farmers will have more risk to manage as the government backs away from supply management. Agribusiness firms should expect to find demand for agricultural inputs more variable as farmers pick and choose among crops to maximize their profits. Consumers will also find food prices more volatile for similar reasons.

Success in serving growing export markets for agricultural products and processed food products is essential for U. S. farmers if this new farm program approach is to succeed. Over the next few years, demand appears sufficiently strong to buoy commodity prices and farm profits. One reason farmers supported the 1996 FAIR Act is that in its early years, it will provide higher farm subsidies (transition payments) than an extension of the 1990 farm act. From 2000 on, however, projected subsidy payments to farmers under the 1990 farm act would have exceeded the 1996 FAIR Act transition payments. Moreover, the 1996 FAIR Act does not protect against low farm prices, as does to the deficiency payments under the 1990 farm act.

Large size and high profit, medium size and average profit farms all fare reasonably well under the 1996 FAIR Act. Farm profits are favorable, although declining across the forecast period. Debt-to-asset ratios for these farms, although rising across the forecast period, do not reach levels that imperil credit-worthiness. In the case of the small size farm, net farm income declines to a level that may adversely affect family living allowances, depending on the amount of off farm work available. For the low profit farm, net income is negative for the last half of the forecast period, and the debt-to-asset ratio rises to a level that will imperil credit-worthiness on new borrowing.

It is reasonable to expect some increase in the pace of farm consolidation under the 1996 FAIR Act. However, that process would occur also under an extension of the 1990 farm act, but at a somewhat slower pace.

Cropland prices, after first rising in response to higher commodity prices, are forecasted to begin a decline by about 1997 and to fall across the forecast period. Cropland prices would decline almost as much under an extension of the 1990 farm act.

How well the 1996 FAIR Act will be received later in the 7-year period will depend upon the strength of farm commodity prices. If prices tumble, farmers can be expected to call for new farm legislation before the end of the seven years. If, on the other hand, prices continue strong throughout the 7-year period, the debate over the next farm legislation will center around continuing the 1996 FAIR Act or some type of revenue insurance program designed to enhance farmer risk management options.

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