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1998 North Dakota Agricultural Outlook: Representative Farms 1997-2007

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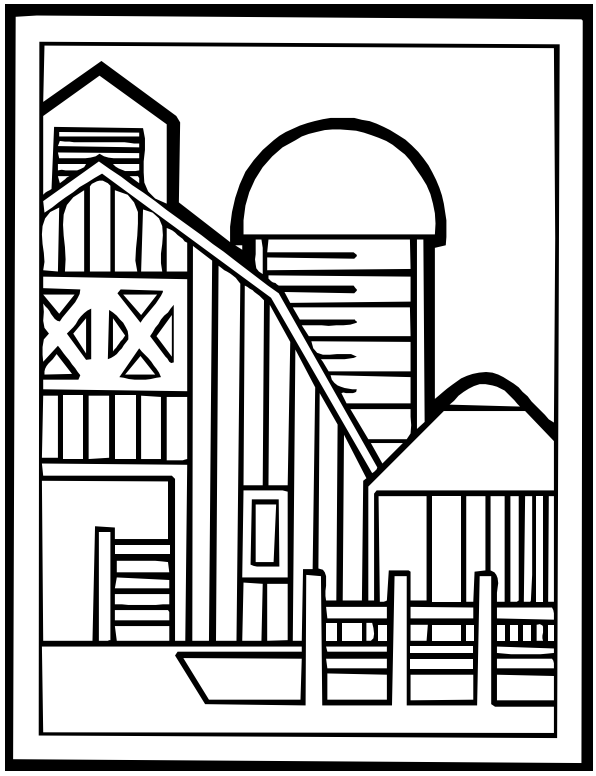

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Abstract

Net farm income for all representative farms except small size and low profit farms in 2007 will be higher than in 1998. Net farm income for small and low profit farms will remain the same and decrease, respectively, for the forecasting period. Cropland prices are projected to fall in all regions of North Dakota after having peaked in 1997. Cash rental rates are projected to follow cropland prices. Debt-to-asset ratios for most farms fall across the forecast period. Debt-to-asset ratios for the low profit and small size farms are higher than those for large and high profit farms.

Key Words: Net farm income, debt-to-asset ratios, cropland prices, land rental rates, farm operating expenses, capitalization rate

Highlights

Net farm income for the large size farm is predicted to increase from $105 thousand to $140 thousand for the 1998-2007 period and for the medium size farm it is predicted to increase from $58 thousand to $80 thousand. Net farm income for the small size farm will range between $33 and $34 thousand for the period.

Net farm income for the high profit farm is predicted to increase from $96 thousand to $115 thousand for the 1998-2007 period and for the average profit farm it is predicted to increase from $51 thousand to $59 thousand. Net farm income for the low profit farm will range between $4 thousand and -$5 thousand for the period.

Debt-to-asset ratios for all representative farms are predicted to remain almost the same throughout the forecast period. Debt-to-asset ratios are projected to be 35% for large and medium size representative farms and 44% for the small size representative farms in 2007. The ratios are also projected to be 27%, 38%, and 53% for high, average, and low profit representative farms in 2007, respectively.

For medium size representative farms, cropland prices will fall 0.8% from $593 per acre in 1998 to $588 in 2007.

For average profit representative farms, cropland prices will increase 5.9% from $573 per acre in 1998 to $607 in 2007.

For medium size representative farms, cash rents will fall 13.6% from $50 per acre in 1998 to $44 in 2007.

For average profit representative farms, cash rent will fall 4.8% from $44 per acre in 1998 to $42 in 2007.

Because of low net farm income and high debt-to-asset ratios for low profit representative farms, the farms may not have financial resiliency to survive.

1998 North Dakota Agricultural Outlook: Representative Farms 1997-2007

Won W. Koo, Richard D. Taylor, and Marvin R. Duncan*

Introduction

North Dakota represents a major agricultural area with distinctive climate and crop mix. The state also is uniquely situated in terms of marketing and logistics within the United States because it shares a border with Canada, which is the largest trading partner of the United States. Changes in government policies through the 1996 Federal Agriculture Improvement Reform (FAIR) Act and the Uruguay Round (UR) Agreement are likely to have affected the region's economy more than any other region in the United States. Canada/U.S. Free Trade Agreement (CUSTA) and North American Free Trade Agreement (NAFTA) also have affected the region more than any other region in the United States.

The main objective of this analysis is to evaluate changes in net farm income and debt-to-asset ratios for different sizes and profit categories of representative farms developed from the North Dakota Farm and Ranch Business Management Association farm records over the 1998 to 2007 period under the 1996 FAIR Act, the UR Agreement, and CUSTA. The secondary objective of this analysis is to evaluate the reaction of cropland prices and cash rental rates to the farm income estimates over the same horizon.

U.S. agriculture has been influenced by major changes in agricultural and trade policies. The FAIR Act will limit spending for government commodity payments to $35.63 billion between 1996 and 2002. 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. The legislation substitutes a 7-year fixed benefit contract for an annually determined entitlement farm payment. In addition, several trade agreements, such as the CUSTA, NAFTA, and the Uruguay Round Agreement, have liberalized agricultural trade and will continue to liberalize agricultural trade for the next decade.

Impacts of these policy changes on North Dakota agriculture differ from overall impacts on U.S. agriculture mainly because North Dakota has its unique soils, climate, crop mix, marketing conditions, and economic base. Even within North Dakota, there is substantial variability in these features leading to different farm level impacts.

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Methodology

Major crops produced in this state are hard red spring wheat, durum wheat, barley (malting and feed), corn, and minor oilseeds, including sunflower and canola. In addition, the region produces sugar beets and potatoes. The agricultural sector contributes the largest share to the state economy, followed by the energy sector. Most farms in this state differ from farms of other states in terms of farm structure and marketing options. The average farm size in North Dakota 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 has 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 farmland.

The North Dakota Representative Farm Model is a deterministic simulation model designed to analyze the impacts of policy changes on farm income. The model projects average net farm incomes, debt-to-asset ratios, cash rents, and cropland prices for representative farms for producing five major crops: wheat, barley, corn, soybeans, and sunflowers. The model is linked to the FAPRI and North Dakota models and uses the prices of the crops generated from the models (Figure 1). This model assumes an average trend yield based on historical data and average predicted prices received by farmers based on the historical relationships between FAPRI prices and North Dakota prices received by farmers. This model cannot incorporate price discounts due to loss of crop quality or yields due to disease, such as scab or drought for the forecasting period. In addition, macro policies and assumptions, trade policies, and agricultural policies are incorporated into the model directly or indirectly.

Alternative farm policies affect net farm income for the representative farms. Changes in return to cropland, given the market-determined capitalization rate, result in changes in land prices. Changes in return to cropland affect the 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 North Dakota Representative Farm

The model has 24 representative farms; six farms in each of four regions of North Dakota. These regions are the Red River Valley (RRV), North Central (NC), South Central (SC), and Western (West) (Figure 2). The farms in each region are representative of the average, high, and low profit farms and the small, medium, and large size farms enrolled in the North Dakota Farm and Ranch Business Management Association.

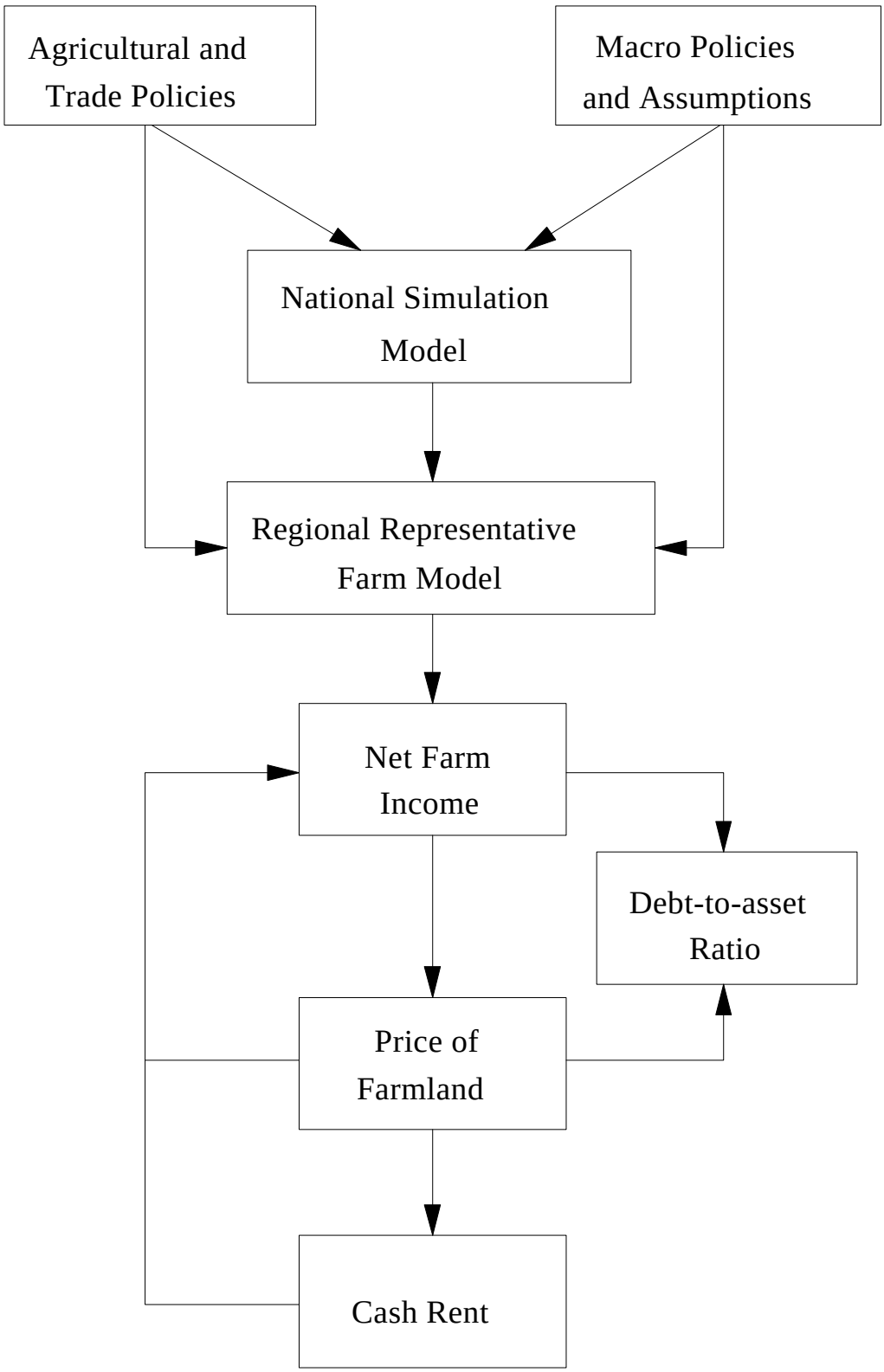
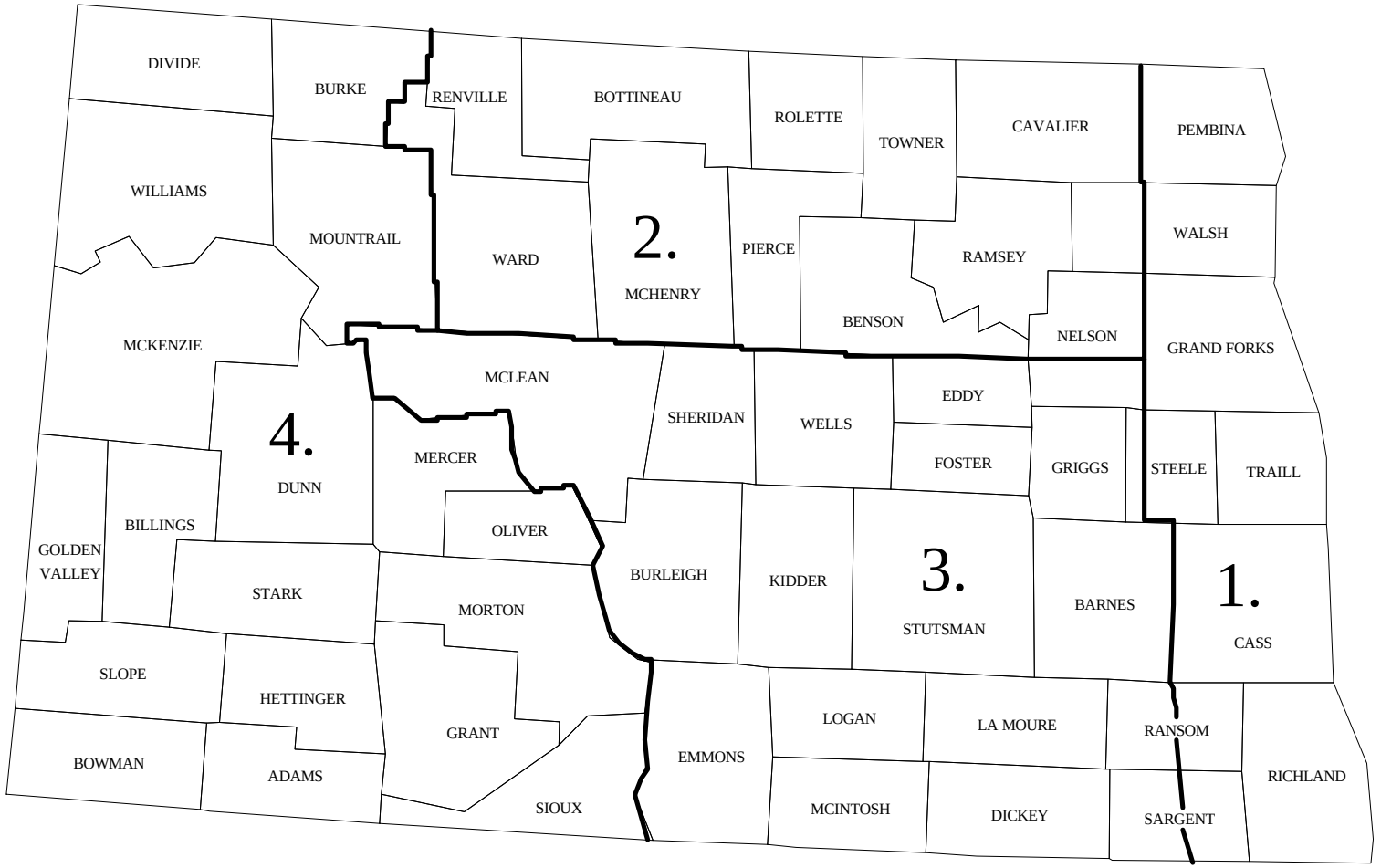


Figure 1. Structure of the North Dakota Representative Farm Model



Region 1. Red River Valley (RRV)
Region 2. North Central (NC)
Region 3. South Central (SC)
Region 4. Western (West)

Figure 2. North Dakota Farm and Ranch Business Management Regions

The representative farms average 1,200 acres of cropland and 410 acres of pasture. The farms in the study are about 50 % larger than the state average reported by National Agricultural Statistical Service (NASS). A reason for this difference is the state average farm includes all farms with $1,000 or more sales; therefore, all hobby farms, farms operated as part of a combined larger farm, semi-retired farms, and commercial farms are included, while the farms used in this study mainly represent commercial farms.

The average representative farm is an average of all farms in the Farm and Ranch Business Management Records System for the state 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 the state or for each production region. The average farm sizes are 1,636 cropland acres for the high profit farm, 1,200 cropland acres for the average profit farms, and 995 cropland acres for the low profit farms (Table 1).

The large farm is the average of the largest 25% of farms in cropland acres for each producing region. The small representative farm is an average of the smallest 25% of the farms for each producing region. The average farm sizes are 2,358 cropland acres for the large size farm, 1,182 cropland acres for the medium size farms, and 475 cropland acres for the small size farms (Table 1).

Table 1. Characteristics of Representative North Dakota Farms, 1994

	Size			Profit		
	Large	Medium	Small	High	Average	Low
Number of Farms	104	207	104	83	415	83
	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

Structure of the Representative Farm Model

The model consists of four components: net farm income, debt-to-asset ratio, land price, and cash rent. This section discusses the definition of each component and the formulas used to calculate the components.

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, hired labor, and indirect costs that include 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. Net farm income is calculated as:

$$(1) \qquad NFI = \sum_{j=1}^{n} Y_j P_j A_j + \sum_{h=1}^{m} P_h L_h + \sum_{j=1}^{n} S_j A_j + I^o - \sum_{h=1}^{m} EX_h^L - \sum_{j=1}^{n} EX_j^C$$

where

Y_j = yield per acre for crop j
P_j = price of crop j
A_j = planted acres of crop j
P_h = price of livestock h
L_h = number of livestock h sold
S_j = government subsidies for crop j per acre
I^o = other farm income
EX^C_j = total expenses in producing crop j
EX^L_h = total expenses in producing livestock h

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 1995 were used to estimate price equations. Those equations were used to estimate cash prices received by North Dakota farmers. The FAPRI prices are used as exogenous variables in the price estimates.

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

Cropland Prices and Cash Rent. Land prices for representative farms are estimated on the basis of the implicit discount rate the farms have previously used and the expected return on land. Therefore, the land prices are defined as the amount that farms can afford to pay for farmland and are not prevailing market 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 average return allocated to each acre of cropland per year is divided by the average cropland price to determine the long-run capitalization rate used by farmers as follows:

$$(2) \qquad R_g = \frac{M_g}{PL_g}$$

where

R_g = long-run capitalization rate in region g
M_g = average net return allocated to crop-land in region g
PL_g = average observed price of cropland in region g

For the forecast years, this capitalization rate is applied to the estimated average income per acre allocated to cropland to determine cropland value for land utilized to produce wheat, corn, soybeans, barley, and sunflowers. The average income is an n-year weighted moving average of annual per acre income. Calculation of cropland prices is summarized as:

$$(3) \qquad PL_{gT} = \frac{1}{R_g} \sum_{t=T-n}^{T} W_t M_{tg}$$

where

PL_{gT} = cropland price in region g in time T
W_t = weighting factor for year t
M_{tg} = net return allocated to cropland in region g and year t

The price of cropland calculated in Equation 3 can be defined as the amount farmers are willing to pay for the cropland to produce wheat, barley, corn, soybeans, and sunflowers.

Cash Rent. Cash rent for cropland is calculated by multiplying a k-year moving average of annual return to farmland by the long-run capitalization rate, plus taxes on land. Calculation of cash rent is summarized by

$$(4) \qquad CR_{gT} = \sum_{t=T-k}^{t} EM_{gt} R_g + TX$$

CR_{gT} = cropland cash rent in region g in time T
EM_{gt} = estimated net return to cropland in region g and year t
TX_T = taxes on land in time T

The cash rent is defined as the amount farmers are willing to pay for the rented cropland to produce wheat, barley, corn, soybeans, and sunflowers.

Data Used for the Representative Farm

The prices of crops obtained from FAPRI and North Dakota simulation models are average farm prices of the crops in the United States. The national average farm prices are converted to the prices received by North Dakota representative farms by regressing average farm price of each crop produced in North Dakota against the national average farm price of the same crop. The price equation used for this study is specified in a dynamic framework on the basis of the Nerlove's partial adjustment hypothesis as follows:

(5) $$P_{it} = a_0 + a_1 P_t + a_2 P_{it-1} + e_{it}$$

where

P_{it} = average farm price of a crop in region i in time t.
P_t = national average farm price of a crop in time t.

The price equation is estimated for each crop produced in North Dakota using the time series data from 1975 to 1996. The estimated equations are used to predict average prices received by farmers in each region in North Dakota from the national average prices from the FAPRI and North Dakota simulation models. The predicted farm prices are shown in Table 2.

Table 2. North Dakota Baseline Price Estimates From the Projected FAPRI Baseline Price

	Spring Wheat	Durum Wheat	Malt Barley	Feed Barley	Soybean	Corn	Sunflowers
	----------$/bu----------						$/cwt
1996	4.38	5.20	2.78	2.21	7.02	2.56	13.54
1997	3.53	3.96	2.35	1.91	6.11	2.38	11.89
1998	3.41	3.78	2.17	1.78	5.68	2.27	11.17
1999	3.45	3.84	2.18	1.79	5.72	2.25	11.38
2000	3.57	4.02	2.25	1.84	5.73	2.30	11.53
2001	3.62	4.09	2.28	1.86	5.77	2.34	11.75
2002	3.65	4.13	2.30	1.88	5.81	2.36	11.96
2003	3.70	4.20	2.34	1.91	5.87	2.41	12.22
2004	3.74	4.26	2.38	1.93	5.95	2.46	12.52
2005	3.80	4.35	2.42	1.96	6.02	2.51	12.78
2006	3.90	4.50	2.50	2.02	6.11	2.57	13.11
2007	3.98	4.61	2.58	2.07	6.11	2.62	13.23

Crop yields in each region also are predicted by using the estimated yield equations for crops produced in each region. The yield equation for each crop in each region is specified in the same dynamic framework as that in the price equation as follows:

(6) $y_{it} = b_0 + b_1 \text{ trend} + b_2 y_{it-1} + e_{it}$

where y_{it} represents yield of a crop in region i in time t and e_{it} is a random error term. A dummy variable was used to compensate for two drought years: 1980 and 1988. The trend variable is included to capture changes in technology in producing the crops.

This equation is estimated for each crop in each region using the time series data from 1976 to 1996. The estimated equations are used to predict crop yields in each region.

The crop mix changes over time as a function of prices of the crops produced in each region. A dynamic acreage equation for each crop is specified on the basis of the Nerlove's partial adjustment hypothesis as follows:

(7) $$A_{jit} = c_o + \sum_{j=1}^{n} c_j P_{jit} + c_{n+1} A_{jit-1} + c_{n+2} G_{it} + e_{jit}$$

where

A_{jit} = the total acres of the jth crop in region i in time t,
P_{jit} = the price of the jth crop in region i in time t,
G_{it} = government policy variables applied to the jth crop in time t,
$e_{jit.}$ = a random error term.

The equations are estimated using time series data from 1976 to 1996. The estimated equations are used to predict the total acres of each crop produced in each region. The predicted prices from Equation 5 are used in the acreage equations. The jth crop share in region i in time t is then calculated as follows:

(8) $$S_{jit} = A_{jit} / \sum_{j=1}^{i} A_{jit}$$

where S_{jit} is an acreage share of the jth crop in region i in time t.

The estimated share of a crop is applied to calculate the total acres of the crop produced in the region by multiplying the total acres in the region by the share.

Other data needed for the model are obtained from the North Dakota Farm and Ranch Business Management Association (farm record system data).

Agricultural Outlook Under the 1996 FAIR Act

The North Dakota Representative Farm Model was used to estimate net farm income, debt-to-asset ratio, land prices, and rental rates under the 1996 FAIR Act for 1998-2007.

Additional assumptions used in this study are

1. Net farm income from livestock operation and production of other crops, including potatoes and canola, remains constant during the period.
2. All farm enterprises in size and operation remain constant in the analysis.
3. The farm equipment stock remains constant, indicating that depreciation allowances are invested back into farm equipment.
4. Inventory changes, accounts receivable, accounts payable, and prepaid expenses and supplies are constant from year to year.
5. Government payments continue for the years after 2002, at the same level as 2002.

Net Income for North Dakota Representative Farms

Table 3 presents net farm income for farms by size and profitability. Average net income for North Dakota representative farms varies, depending upon the size of farm and its profitability ranking. The net income for the large size farm will decrease from $105 thousand in 1998 to $103 thousand in 1999 and then increase gradually over the 2000-2007 period (Figure 3). The net income in 2007 will be 33% higher than that in 1998. The net farm income for the medium size farm is $72 thousand in 1998, will decrease to $71 thousand in 1999, and then will increase gradually. The net income in 2007 will be 25% higher than that in 1997. The net farm income for the small size farm is $34 thousand in 1998 and will remain almost the same level for the period. This implies that the large size farm will operate better than the medium and small size farms under the 1996 FAIR Act and the current international market conditions. State average net farm income is $121 thousand for the large size farm, $80 thousand for the medium size farm, and $34 thousand for the small size farm.

Increases in net farm income from 2000 to 2007 are mainly due to strong import demand for agricultural crops from developing countries. Crop production in the United States and around the world is predicted to be consistent with annual trend line increases, while demand is predicted to increase faster than supply due mainly to the expected increases in income and slow but steady growth in population in developing countries.

Table 3. State Average Net Farm Income for Different Size and Profit Representative Farms

	Size			Profit		
	Large	Medium	Small	High	Ave	Low
			----1000 dollars---			
1996	145	91	42	116	67	19
1997	75	58	30	67	34	-7
1998	105	72	34	94	51	2
1999	103	71	33	95	52	1
2000	112	75	34	101	56	3
2001	115	77	34	103	57	4
2002	116	77	33	103	56	2
2003	123	81	34	107	58	2
2004	126	82	33	108	58	2
2005	130	85	33	111	59	2
2006	136	87	33	113	60	-2
2007	140	90	33	111	59	-5
(1998-2007 Ave)	121	80	34	105	57	1

The net farm income for the high profit farm was $94 thousand in 1998 and will gradually increase (Figure 4). The income in 2007 is 18% higher than that in 1997. Changes in the net farm income for the average profit farm are similar to those for the high profit farms, but recovery rate is slower than that for the high profit farm. The net farm income for the low profit farm is $2 thousand and decreases. This clearly indicates that management efficiency plays an important role in farm operation. The low profit farm may not have financial resiliency to survive in a more market oriented environment. State average net farm income is $105 thousand for the high profit farm, $57 thousand for the average profit farm, and $1 thousand for the low profit farm.

The net farm income for large size farms is larger than that for high profit farms mainly because the large size farm is larger in terms of cropland acres than the high profit farm. However, the high profit farm has a higher return per acre than the large size farm (Table 4). The net farm income for the small size farm is larger than that for the low profit farm even though the small size farms are smaller in terms of cropland acres than the low profit farms. The medium size and average profit farms are not comparable because the average profit farm is representative of the average of all farms in the survey while the medium size farm is representative of the middle 50% of the farms in the survey.

The net farm income differs across the state due mainly to differences in crop mix, yield, and land prices; net farm income is the highest in the North Central region and the lowest in the South Central region. The net farm income increases gradually from 1998 to 2007 (Figure 5).

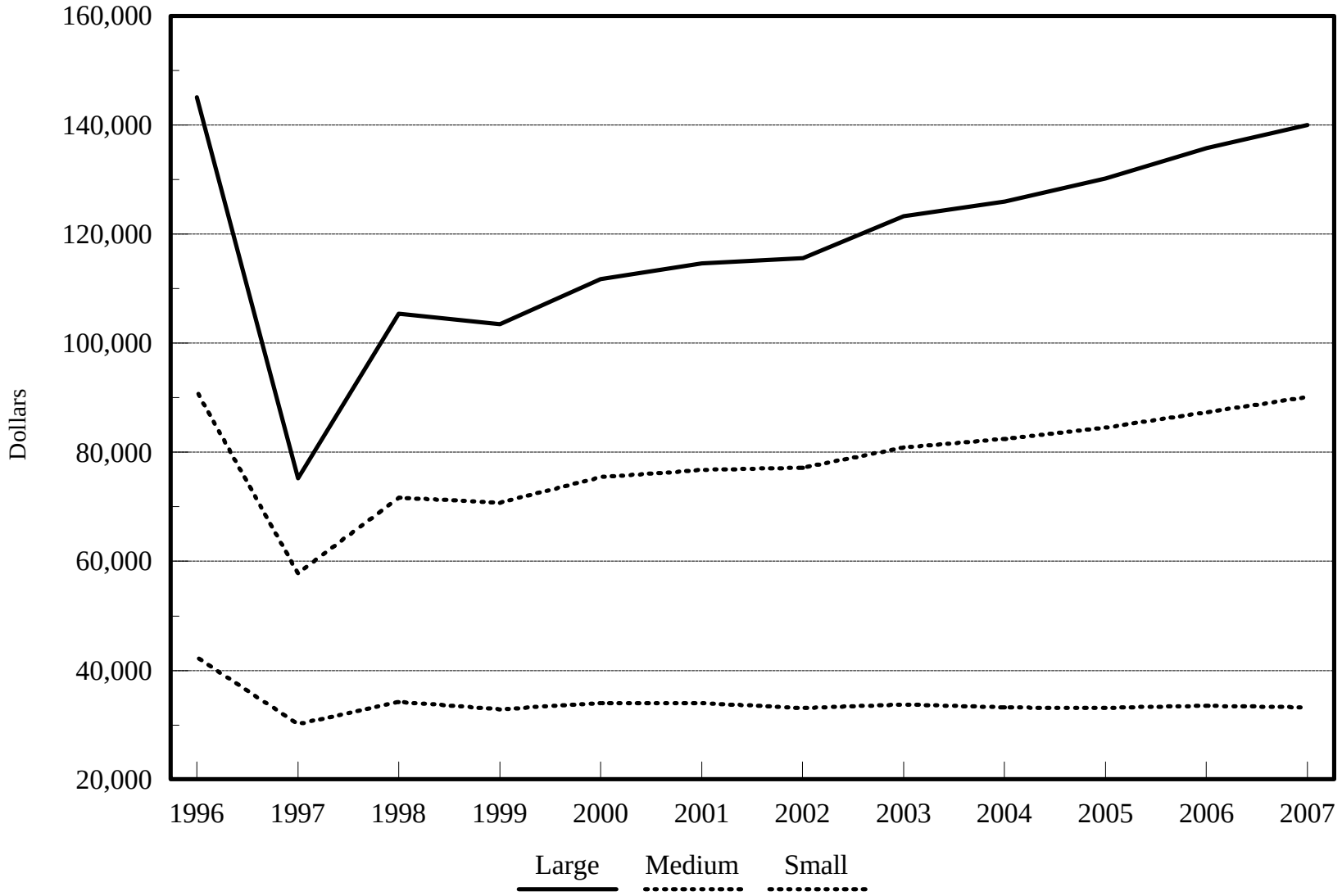


Figure 3. Net Income for North Dakota Representative Farms under the 1996 FAIR Act

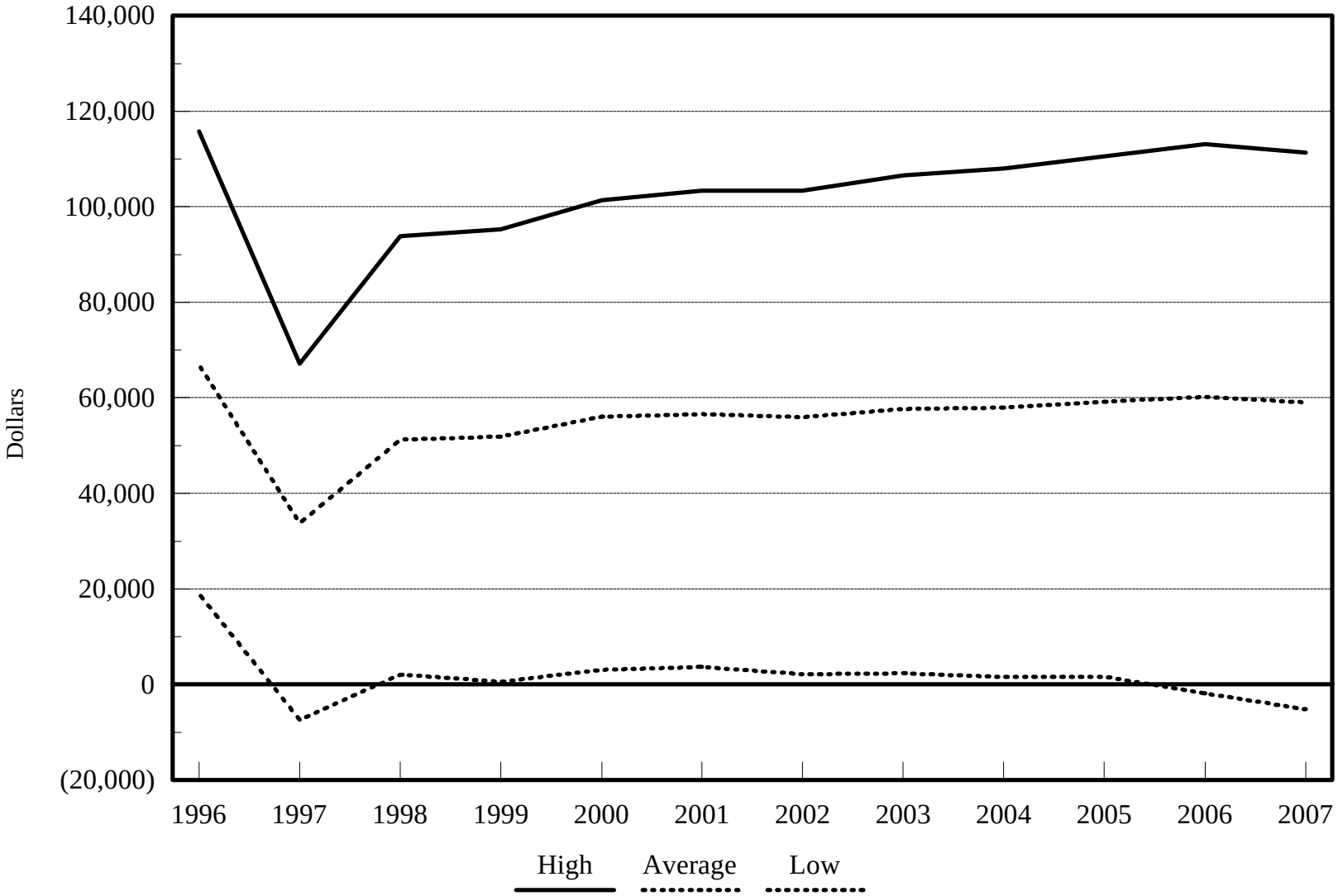


Figure 4. Net income for North Dakota Representative Farms under the 1996 FAIR Act

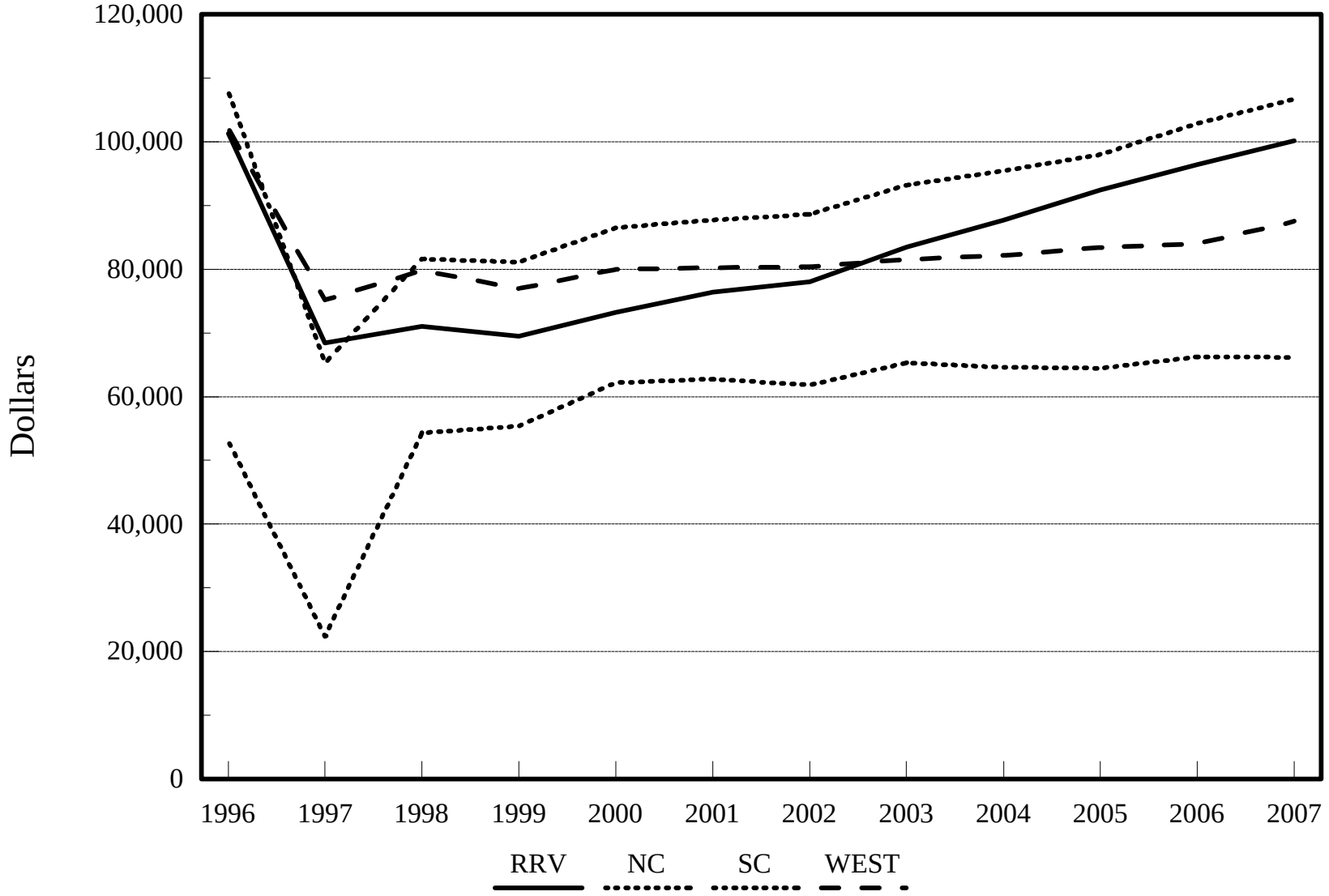


Figure 5. Net Farm Income for North Dakota Medium Size Farms

Table 4. State Average Return to Land Per Acre for Different Size and Profit Representative Farms

	Size			Profit		
	Large	Medium	Small	High	Average	Low
	dollars per acre					
1996	59	58	10	62	43	25
1997	31	30	-13	40	28	0
1998	46	46	-4	56	34	11
1999	46	45	-7	56	34	9
2000	48	47	-6	57	35	12
2001	47	43	-21	58	35	10
2002	47	42	-17	62	34	7
2003	51	43	9	67	40	13
2004	50	48	25	68	41	12
2005	54	51	26	63	43	14
2006	60	58	30	64	43	11
2007	62	59	31	65	43	11

Debt-to-asset Ratio for North Dakota Representative Farms

Debt-to-asset ratios for all size farms increases rapidly in 1997 due to the lower net farm incomes in 1997 (Table 5). The debt-to-asset ratios are predicted to decrease slowly. From 1998 to 2007, the debt-to-asset ratios will remain at 0.35 for the large size farm, will decrease from 0.37 to 0.35 for the medium size farm, and will decrease from 0.45 to 0.44 for the small size farm (Figure 6). The debt-to-asset ratios for the small size farm are much higher than those for other farms, but do not reach a critical level that would impair access to new bank credit.

Table 5. State Average Debt-to-asset Ratios for Different Size and Profit Representative Farms

	Size			Profit		
	Large	Med	Small	High	Ave	Low
1996	0.31	0.33	0.41	0.26	0.35	0.49
1997	0.35	0.37	0.45	0.30	0.41	0.56
1998	0.35	0.37	0.45	0.29	0.40	0.54
1999	0.35	0.37	0.46	0.29	0.40	0.55
2000	0.35	0.37	0.45	0.28	0.39	0.54
2001	0.35	0.36	0.45	0.27	0.38	0.53
2002	0.35	0.37	0.46	0.28	0.38	0.53
2003	0.35	0.36	0.46	0.27	0.38	0.53
2004	0.37	0.37	0.46	0.27	0.38	0.53
2005	0.36	0.36	0.45	0.26	0.37	0.52
2006	0.35	0.35	0.44	0.26	0.36	0.51
2007	0.35	0.35	0.44	0.27	0.37	0.52
(1998-2007 Ave)	0.35	0.36	0.45	0.27	0.38	0.53

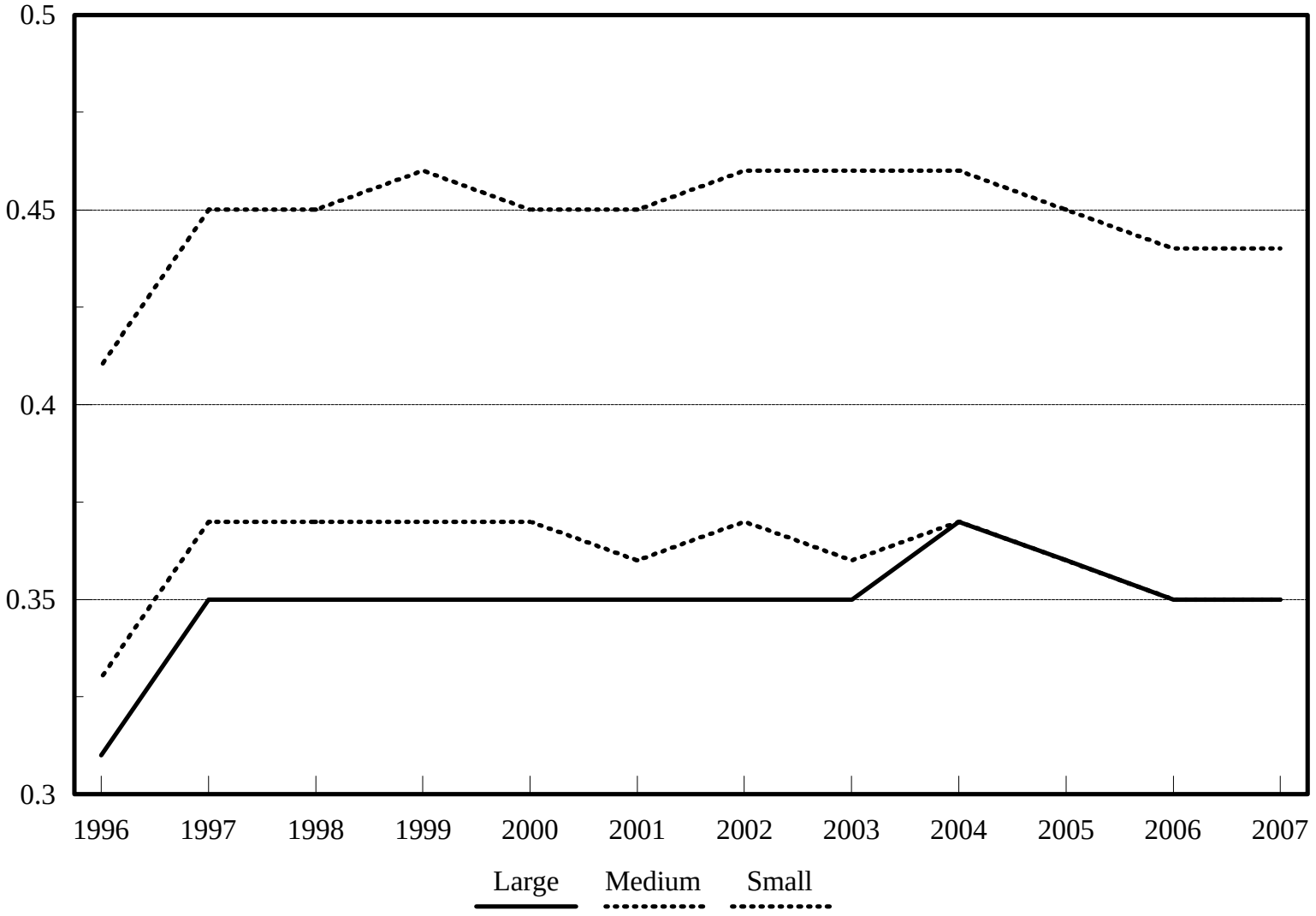


Figure 6. Debt-to-asset Ratio for North Dakota Representative Farms under the 1996 FAIR Act

Debt-to-asset ratios for high, average, and low profit farms also decrease for the forecasting period from 0.30 to 0.27 for the high profit farm, from 0.41 to 0.37 for the average profit farm, and from 0.56 to 0.52 for the low profit farm (Figure 7). The debt-to-asset ratios for the low profit farm are larger than those for other farms, but do not reach levels that imperil creditworthiness. However, higher debt-to-asset ratios for the low profit farm, when coupled with meager net farm income, suggest serious problems in sustaining the farm business unless substantial off-farm income is earned by the farm families. Without off-farm income to provide family living requirements, it is unlikely that the low profit farm can survive or that it could obtain operating credit. The farm operator may wish to investigate other investment opportunities in which higher returns can be earned or markedly restructure the farming operation to improve its profitability. In addition, the highest debt-to-asset ratios for the low profit farm clearly indicate management efficiency is one of the most important factors affecting net farm income.

Debt-to-asset ratios also differ over the regions due mainly to differences in crop mix, yields, and land prices, with the highest being in the Red River Valley and the lowest being in the North Central region (Figure 8).

Land Value and Cash Rents

Table 6 presents land prices for various representative farms in North Dakota. Land values for both the medium size and average profit representative farms are shown in Figures 9 and 10, respectively. The land prices differ over the regions; the highest in the Red River Valley and the lowest in the West region (Figures 9 and 10). Land prices also change over the forecast period. They are the highest in 1997 due to the lagged impact of higher net farm income in 1995 and 1996. The prices decrease gradually and then recover toward the end of the period.

Cash rents for both the medium size and average profit farms are the highest in 2000 due to the higher land prices in 1997 and then decrease over the remaining period, following return to land (Figures 11 and 12). They also differ over the regions; the highest in the Red River Valley and the lowest in the West or North Central region (Table 7).

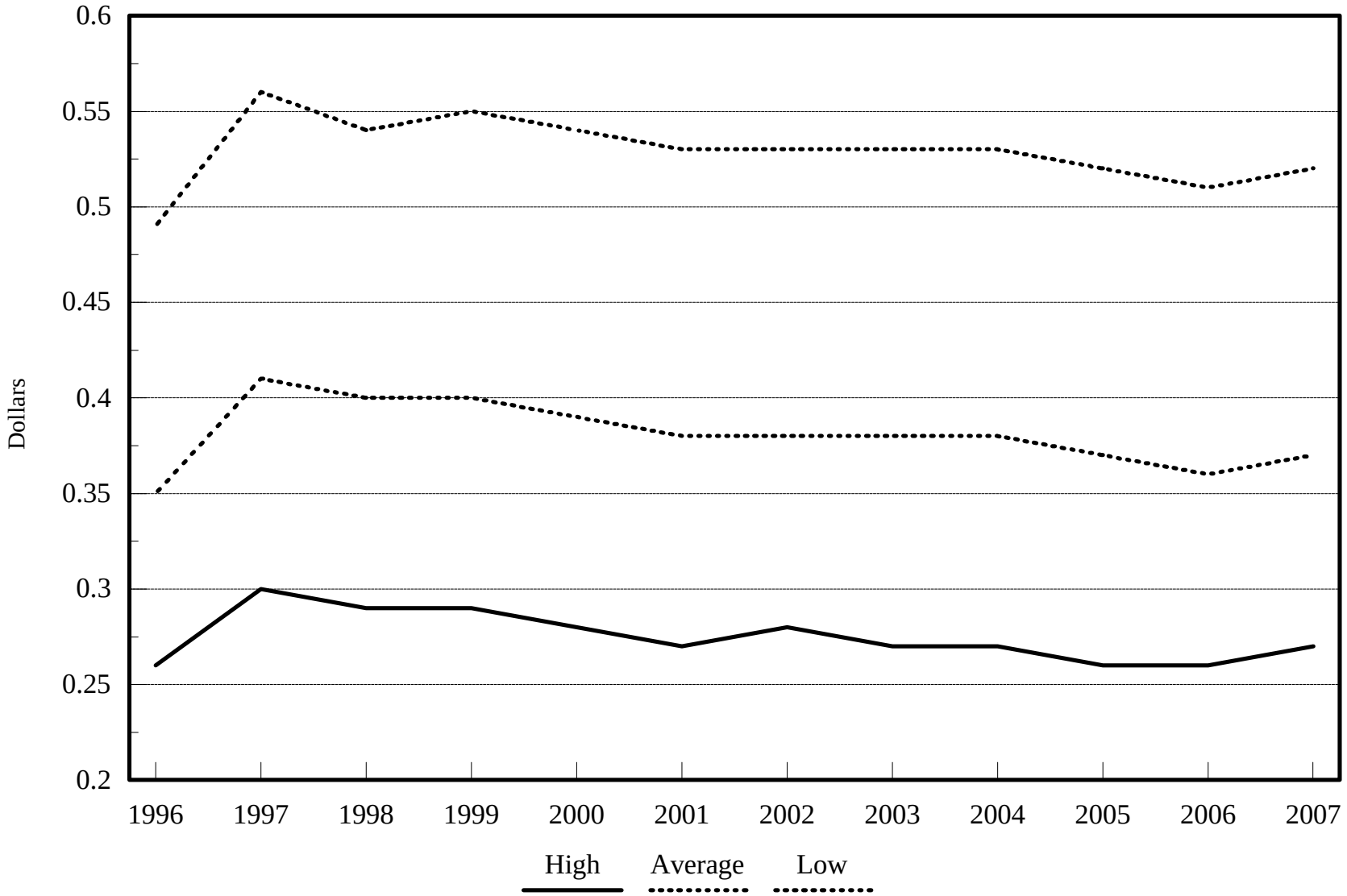


Figure 7. Debt-to-asset Ratio for North Dakota Representative Farms under the 1996 FAIR Act

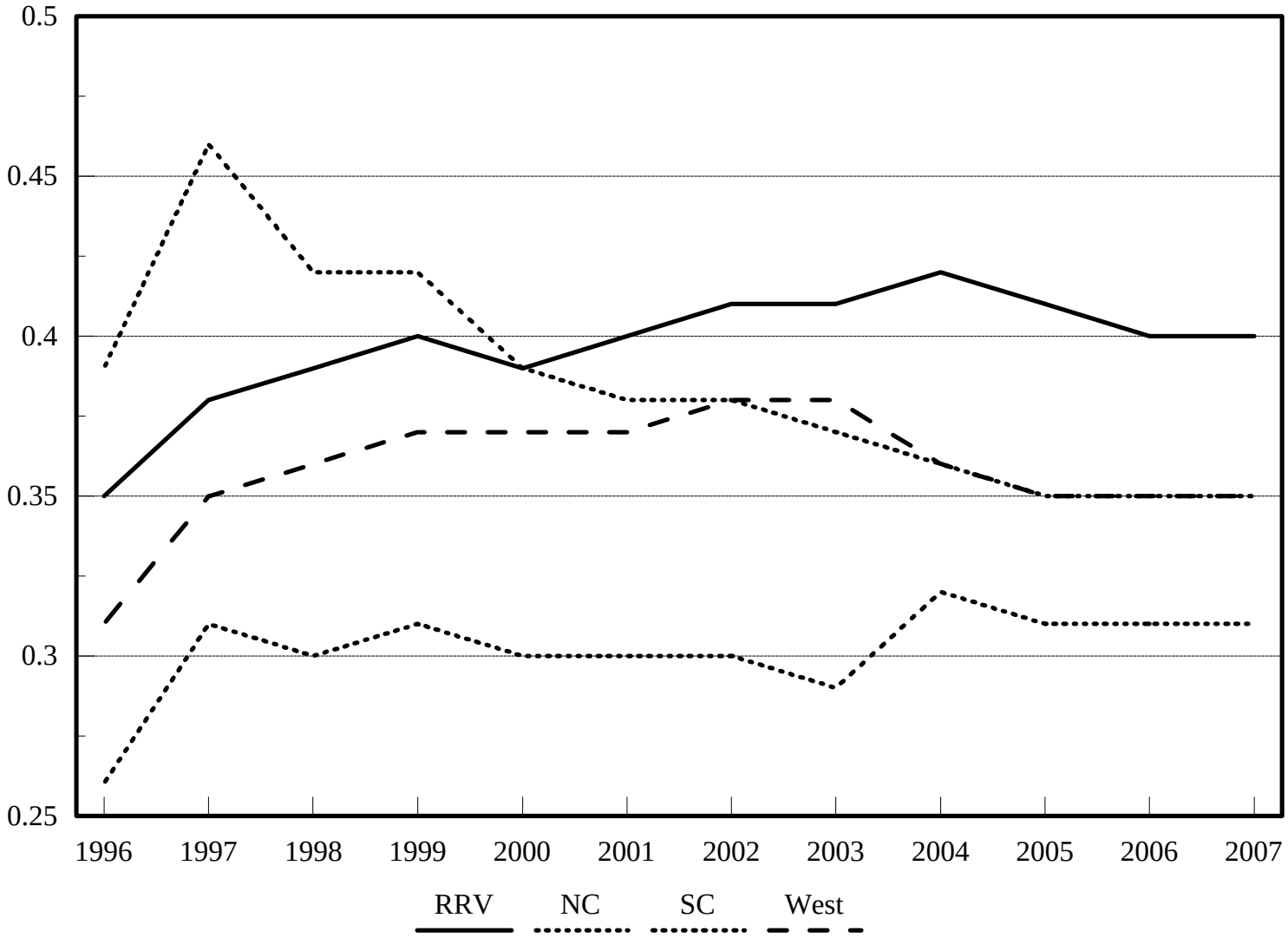


Figure 8. Debt-to-asset Ratio for Medium Size North Dakota Representative Farms under the 1996 FAIR Act

Table 6. North Dakota Land Prices for Different Size and Profit Representative Farms

	Size					Profit				
	RRV	NC	SC	WEST	State Ave	RRV	NC	SC	WEST	State Ave
	dollars per acre									
1996	946	528	595	448	629	946	528	595	448	629
1997	1046	569	509	488	653	1032	543	575	470	655
1998	963	482	495	431	593	925	464	502	401	573
1999	931	463	471	386	563	878	448	468	376	542
2000	890	441	452	351	533	814	429	452	371	516
2001	883	447	459	353	536	828	437	467	382	529
2002	837	464	464	345	527	855	469	490	394	552
2003	795	466	465	329	514	822	474	501	401	549
2004	781	476	484	320	515	797	487	518	410	553
2005	785	487	511	367	538	818	492	526	419	564
2006	819	499	549	418	571	904	505	539	438	596
2007	840	518	568	424	588	922	510	550	445	607
(1998-2007 Ave)	853	474	492	372	548	856	472	501	401	558

Table 7. Cash Rent for Medium Size and Average Profit Representative Farms

	Size					Profit				
	RRV	NC	SC	WEST	Ave	RRV	NC	SC	WEST	Ave
	dollars per acre									
1996	55	33	39	28	39	54	32	39	31	39
1997	58	36	44	34	43	58	37	40	34	42
1998	65	43	48	44	50	64	40	36	35	44
1999	70	48	55	51	57	68	41	35	33	44
2000	71	48	56	51	57	66	39	34	29	42
2001	67	44	54	45	54	61	36	34	28	40
2002	64	42	52	41	50	59	35	33	29	39
2003	61	40	48	38	47	59	35	34	29	39
2004	58	40	47	36	45	59	37	35	30	40
2005	55	40	46	34	44	58	38	39	30	40
2006	54	40	46	34	44	57	39	38	30	41
2007	54	41	48	32	44	58	39	39	31	42
(1998-2007 Ave)	62	43	50	41	49	61	38	35	30	41

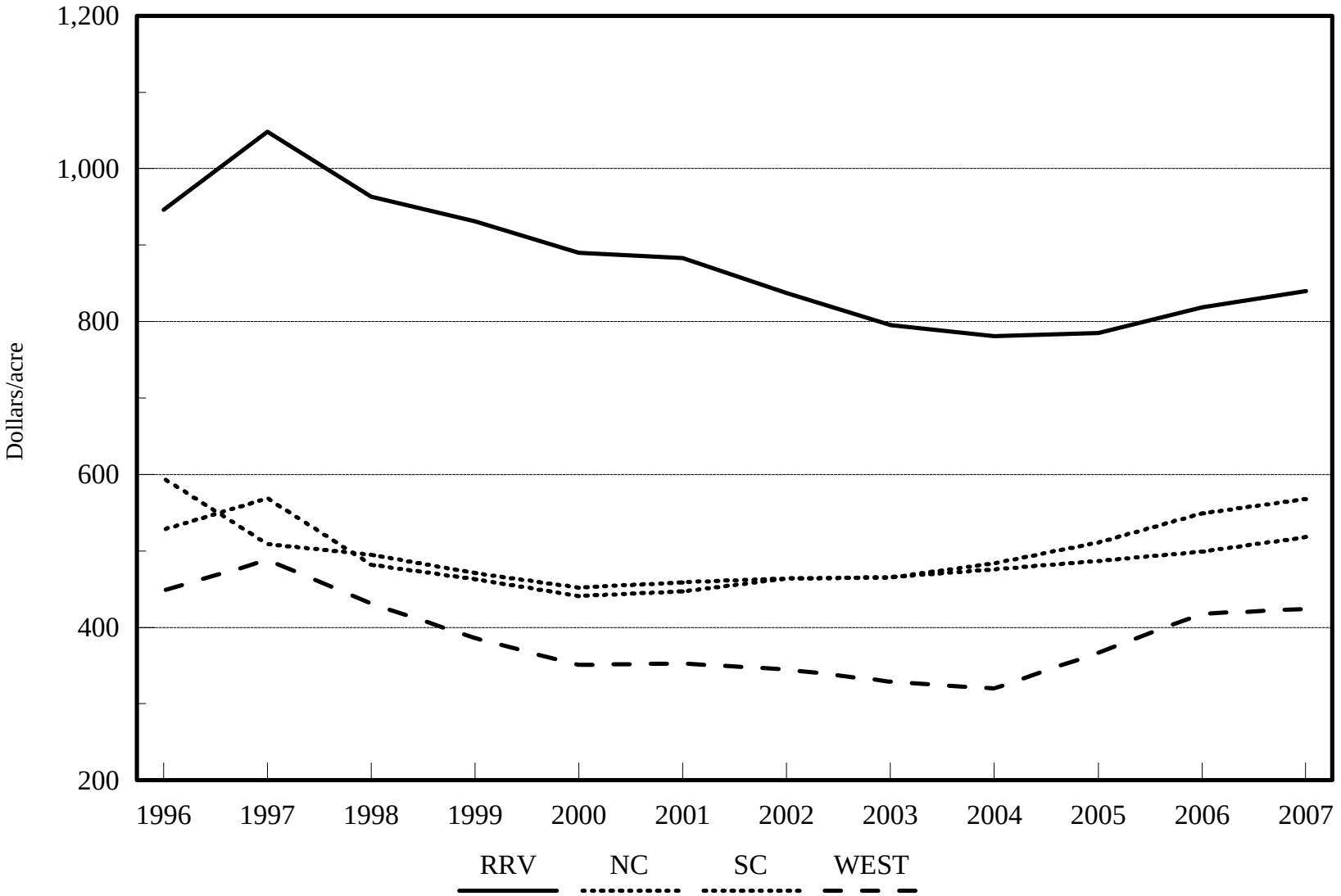


Figure 9. Average Prices of Cropland for Medium Size Representative Farms under the 1996 FAIR Act

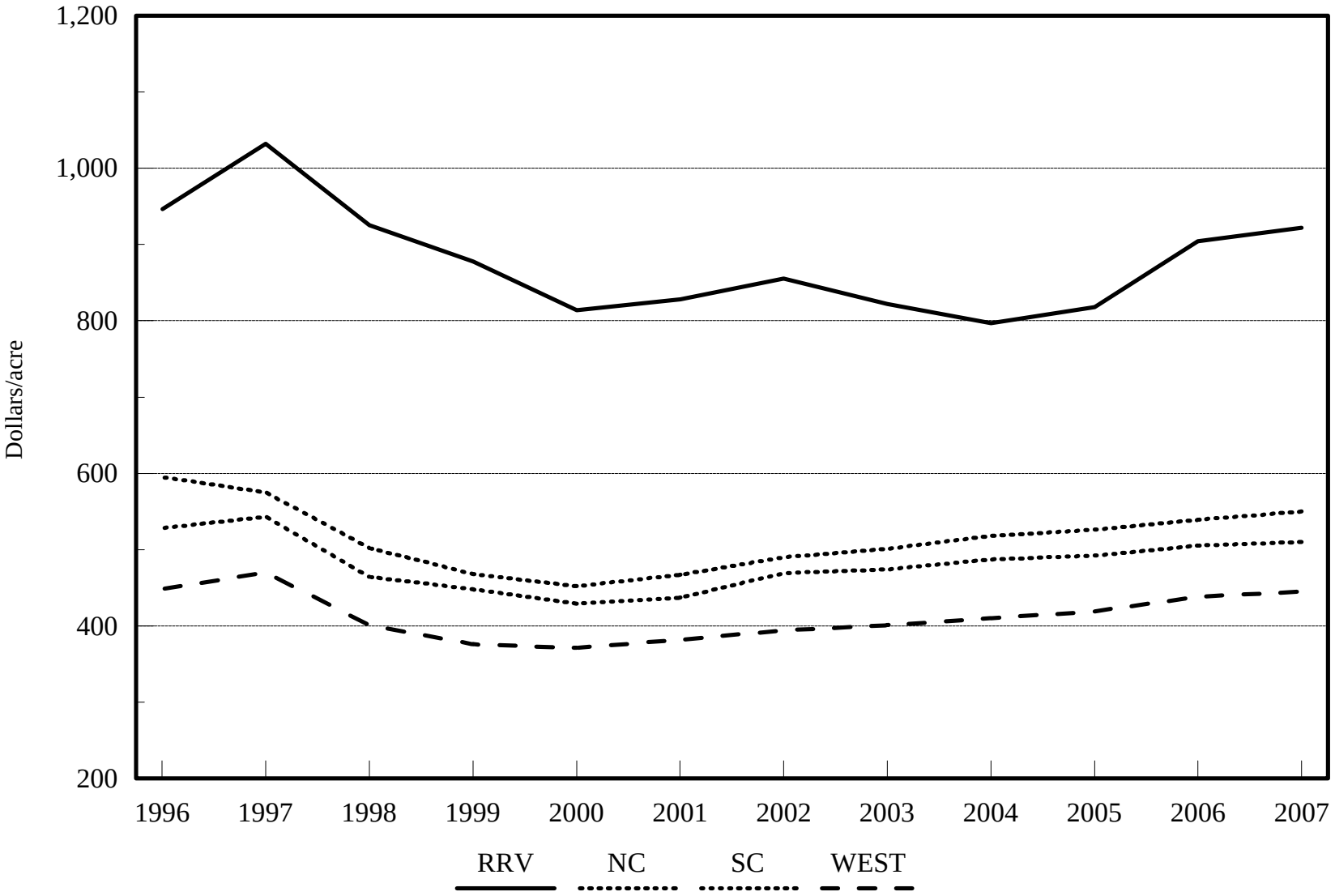


Figure 10. Average Prices of Cropland for Average Profit Representative Farms under the 1996 FAIR Act

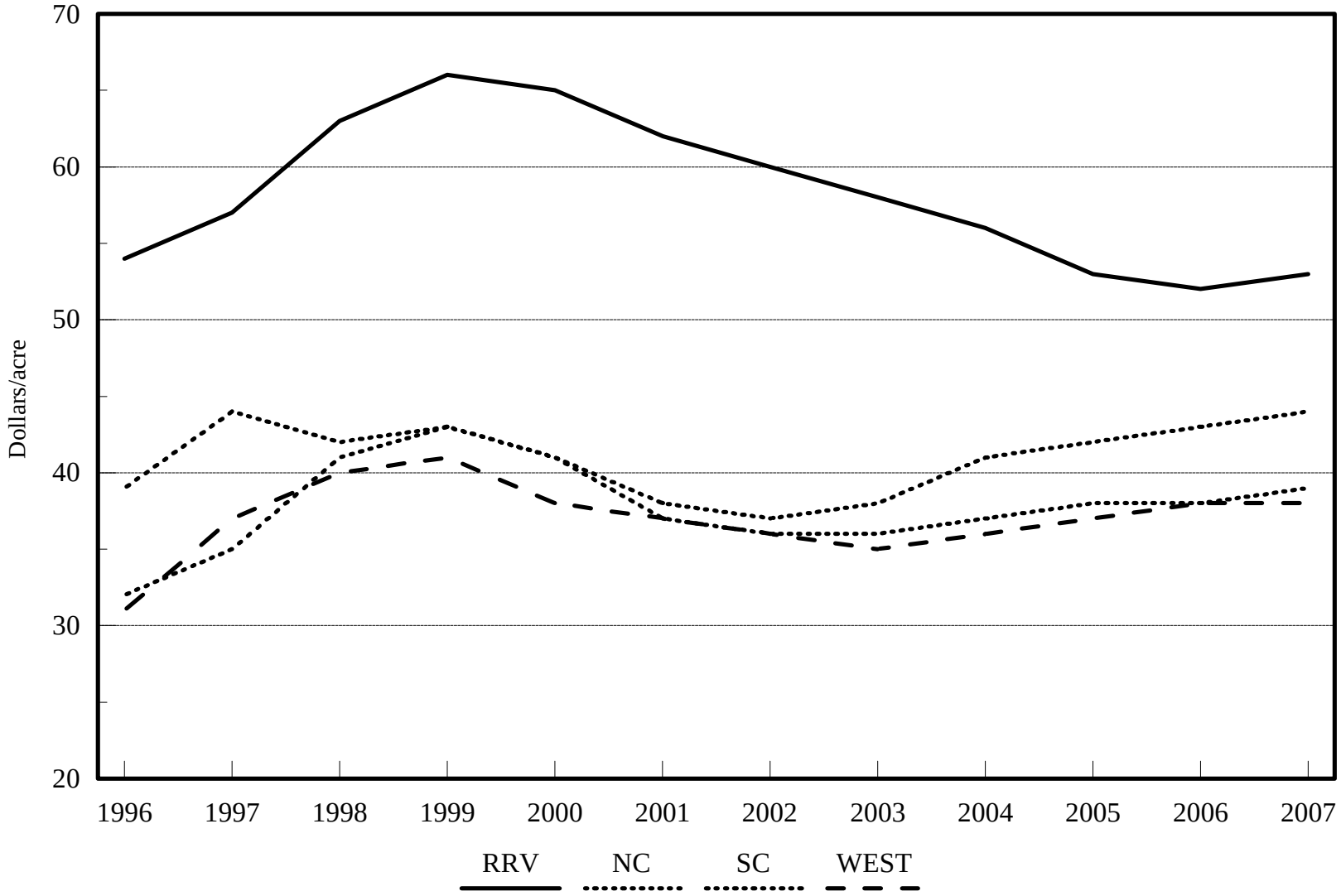


Figure 11. Cash Rent Paid by Medium Size Representative Farms under the 1996 FAIR Act

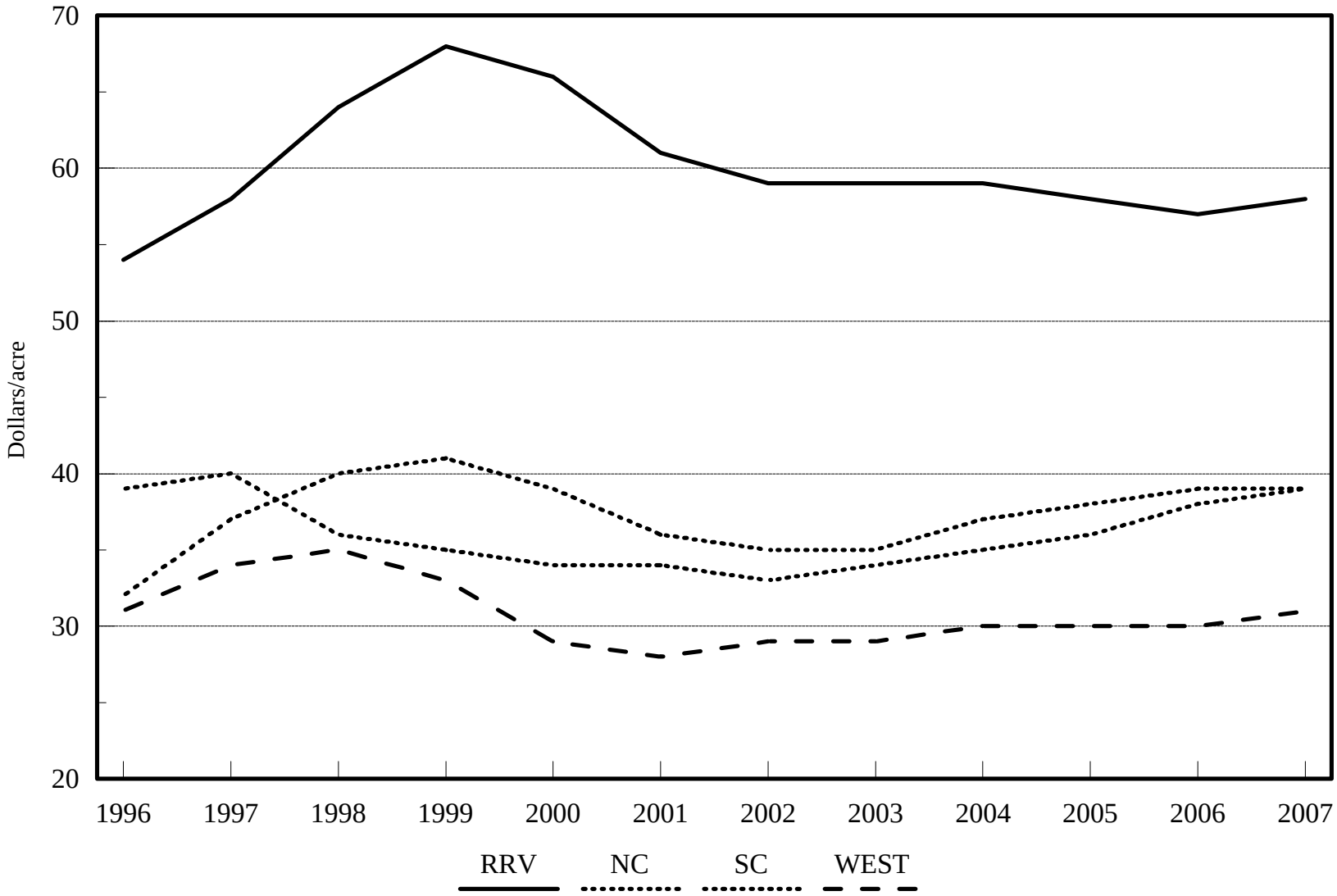


Figure 12. Cash Rent Paid by Average Profi t Representative Farms under the 1996 FAIR Act

Concluding Remarks

The federal government no longer manages supplies of program crops through acreage bases and planting controls. Farm subsidy levels are fixed at a decreasing level through a 7-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. The largest annual decreases in subsidy levels come in the last 2 years of the 7-year contract. In the final year of the contract, the USDA is providing about $4 billion in annual farm subsidies.

Net farm income will reach the lowest level in 1999 and then increase gradually. Increases in net farm income from 2000 to 2007 are mainly due to strong import demand for agricultural crops from developing countries. Crop production in the United States and around the world is assumed to be normal with annual trend line increases.

Land prices are predicted to be the highest in 1997 due to the lagged impact of higher net farm income in 1995 and 1996. Prices are predicted to decline until 2004 and then increase gradually.

Cash rent levels are predicted to be the highest in 2000 due to the higher return to land in 1995-1996 and are predicted to decline slowly.

Debt-to-asset ratios are the highest in 1997 due to the lower net farm income in 1997. The debt-to-asset ratios are predicted to decrease slowly. The debt-to-asset ratios for the low profit and small size farms are predicted to be higher than those for other size and profit farms, but do not reach levels that imperil creditworthiness. Higher debt-to-asset ratios for low profit farms, when coupled with meager net farm income, suggests serious problems in sustaining the farm business unless substantial off farm income is earned by the farm families. In addition, the highest debt-to-asset ratios for the low profit farm clearly indicate management efficiency is one of the most important factors affecting net farm income under the 1996 FAIR Act.

It is important to recognize the degree to which North Dakota farmers' fortunes have been integrated into a world marketplace. North Dakota farmers compete with producers of the same commodities in other parts of the world, such as in Brazil and Argentina or Eastern Europe. In addition, the agricultural outlook is influenced by the financial crisis in East and Southeast Asia, which will increase unemployment and reduce per capita income in the region. Export demand for North Dakota agricultural products in these countries will not meet expectations for a number of years.

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