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THE IMPACT OF FARM PROGRAM ALTERNATIVES ON FARM DEBT-TO-ASSET RATIOS AND CASH RENTAL RATES

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Executive Summary

* The analyses reported are based on representative farms developed from participants in the North Dakota Farm and Ranch Business Management Association farm record program. Representative farms are classified as high, average, and low profit.

* Debt-to-asset ratios for average profit representative farms do not increase above 60 percent by 2003 in any of the four production regions under the first four policy scenarios.

* Debt-to-asset ratios for high profit representative farms do not increase above 46.6 percent by 2003 in any of the four production regions under the first four policy scenarios.

* Debt-to-asset ratios for low profit representative farms increase to as high as 77.2 percent by 2003 in the West Production Region under the No Program Scenario.

* Debt-to-asset ratios for low profit representative farms exceed 75 percent in one or more production regions by 2003 under each of the first four farm program scenarios.

* Most low profit representative farms will be severely stressed under the first four farm program scenarios.

* Both the preliminary Republican and Democrat Budget Proposal Constraints are more favorable to farmers than the other four farm program scenarios.

* However, for low profit representative farms, three of four production regions in the state exhibit debt-to-asset ratios of 65 percent or above by 2003 under either proposal.

* Cash rental rates fall furthest under the No Farm Program Scenario and least under the Lugar Scenario by 2003 on a statewide basis for the first four farm program scenarios.

* Declines in cash rental rates were as large as 60.7 percent in the Red River Production Region under the No Program Scenario and as small as 26.8 percent for the North Central Production Region and the Lugar Scenario by 2003.

* Declines in cash rental rates range from 12.7 to 24.5 percent in the four production regions by 2003 under the Republican Scenario.

* Declines in cash rental rates range from 7.8 percent to 19.1 percent in the four production regions by 2003 under the Democrat Scenario.

THE IMPACT OF FARM PROGRAM ALTERNATIVES ON FARM DEBT-TO-ASSET RATIOS AND CASH RENTAL RATES

Marvin Duncan, Won W. Koo,
Richard D. Taylor, and Dwight G. Aakre*

The objective of this analysis was to evaluate the impact of farm program alternatives on farm debt-to-asset ratios and cash rental rates.

The alternative farm policy options considered in this study were those considered in the FAPRI analysis, Senator Lugar's proposal and preliminary Republican and Democrat farm program budget proposals.

The alternative scenarios evaluated are summarized as follows:

1. **No program** - Eliminate target prices, loan rates, export enhancement programs, sunflower and cottonseed oil assistance programs, dairy export incentive program, and dairy program. This option eliminates all federal programs that involve direct spending to support agricultural sector income. The option also eliminates acreage reduction program authority and the 0/85 or 92 and 50/85 options.

2. **Marketing loan program** - Eliminate target prices, loan rates, ARP authority, and 0/85 or 92 and 50/85 options. Replace them with recourse marketing loans with loan rates set in proportion to the current target prices. The export enhancement program is eliminated. Dairy and other programs operate under current law.

3. **Revenue assurance program** - Eliminate target prices, loan rates, ARP authority, and 0/85 or 92 and 50/85 options. Replace them with a program that ensures producer revenues at 70% of gross revenue calculated by multiplying the 5-year moving average posted county price (or equivalent) by a producer's 5-year average yields. In addition, producers are provided decoupled transition payments of 80% of historical deficiency payments based on the 1990 farm program in 1996, 60% in 1997, 40% in 1998, 20% in 1999, and 0% in 2000. This program maintains export enhancement programs. Dairy and other programs are the same as under current law.

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

4. **Lugar's target price program** - This program is the same as the present program except for reducing target prices. Target prices decline by 15% over the 5-year period, 3% annually. At the end of the fifth year, the target prices remain at the reduced level.

5. **A preliminary Republican budget proposal constraint** imposed on the FAPRI base line projection. This proposal anticipates an annual budget cap on farm program spending that starts at $7.6 billion in 1996 and declines to $4.9 billion in 2000. We assume the cap remains constant after 2000.

6. **A preliminary Democrat budget proposal constraint** imposed on the FAPRI base line projection. This proposal anticipates an annual budget cap on farm program spending that starts at $8.6 billion in 1996 and declines to $7.0 billion in 2000. We assume the cap remains constant after 2000.

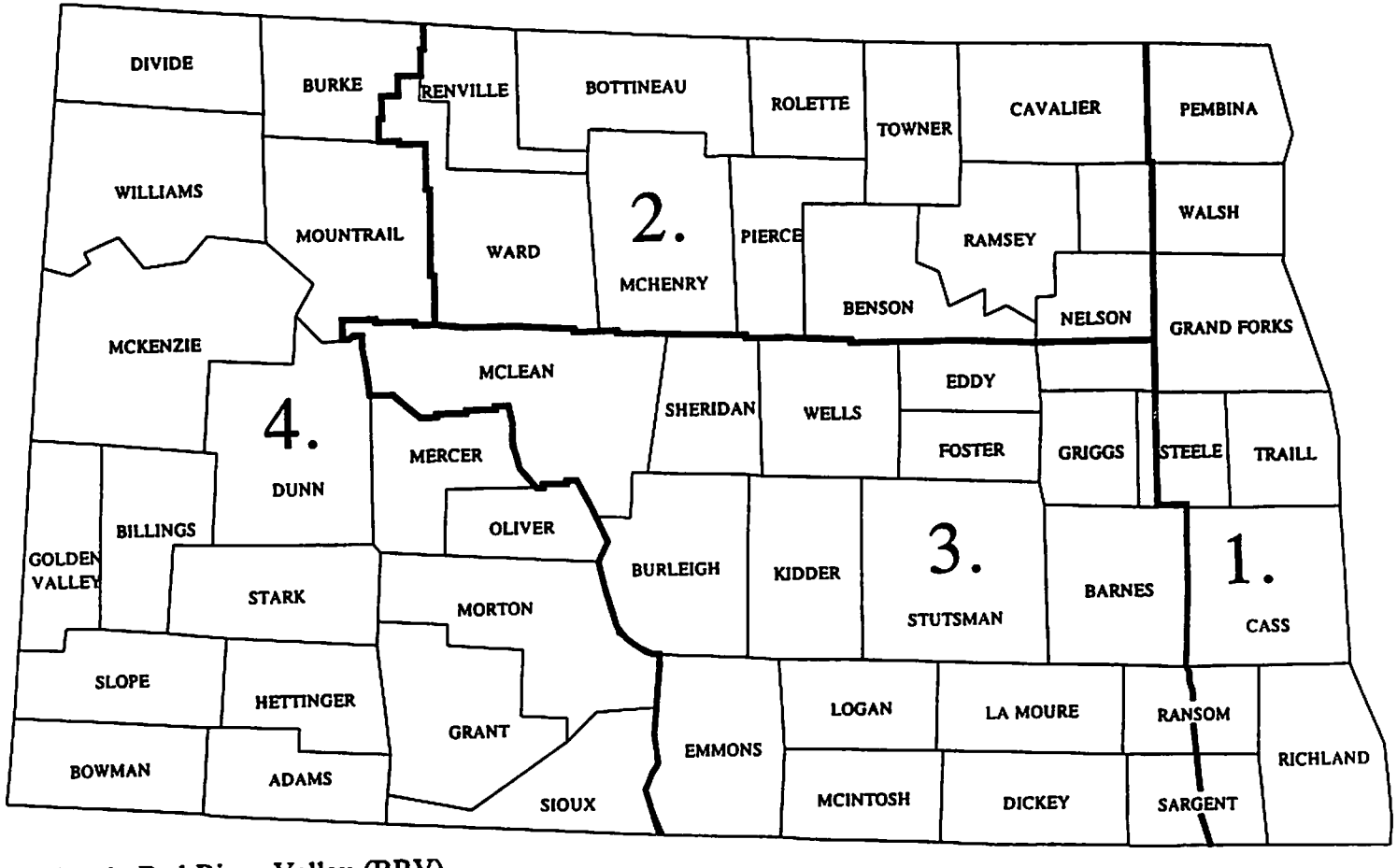
Methodology

This analysis is based on the North Dakota Representative Farm and Ranch Model which uses the FAPRI projections as an input. The model has 12 representative farms, three 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 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 focused on changes in farms' debt-to-asset ratios and changes in cash rent on land used for producing five major crops: wheat, barley, corn, soybeans, and sunflowers under the alternative farm program options.

Characteristics of average representative farms in each region are shown in Table 1. The average representative farm is an average of all farms in the Farm and Ranch Management Records System for the state or for each production region. The high profit representative farm is an average of farms in the top 20 percent of farm profitability for the state or for each production region. The low profit representative farm is an average of farms in the low 20 percent of farm profitability for the state or for each production region.

Net farm income per farm, land prices per acre, and cash rental rates for the high, average, and low profit representative farms are calculated according to the procedures set out in ANALYSIS OF ALTERNATIVE FARM PROGRAMS, Department of Agricultural Economics, Agricultural Experiment Station, North Dakota State University, May 10, 1995.



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

Figure 1. North Dakota Farm and Ranch Business Management Regions

Table 1. Characteristics of Average Representative Farm in North Dakota

	RRV	NC	SC	WEST
Cropland	1234	1181	1369	1017
Owned Cropland	217	385	504	486
Wheat	550	733	706	625
Barley	162	217	142	90
Sunflower	66	61	136	0
Corn	77	0	43	0
Soybeans	244	0	37	0
Sugarbeet	55	0	0	0
Pasture	23	340	351	927

It is assumed that the farm equipment stock remains constant in the analysis. In other words, depreciation allowances are assumed to be invested back into farm equipment. A market determined capitalization rate is used in calculating land prices. Changes in residual income attributable to land determine land prices based on a weighted four year moving average. Changes in land prices determine cash rental rates charged for rented land based on the market determined relationship of land prices to cash rental rates. Cash rental rates adjust based on a three year moving average of land prices.

This study assumed that net farm income from livestock operations and production of other crops, including potatoes, sugarbeets, and canola, remain constant during the forecast period.

Analysis of alternative farm policies are reflected in changes in net farm income and land prices for the representative farms. These changes in turn affect the debt-to-asset ratios of the representative farms and the cash rental rates for farmland used in production of wheat, barley, corn, soybeans, and sunflowers.

Lower farm income is reflected in reduced allocation of income to owned farmland used in production of the crops in the analysis. Reduced allocation of income to farmland, given the market determined capitalization rate, results in lowered land prices. Reduced land prices result in lower cash rental rates farmers are willing to pay on land used in production of the crops in the analysis. Withdrawal for family living and reductions in owned land prices reduce farm asset levels, resulting in an increase of debt-to-asset ratios.

Results

The study results are divided into two parts: the first part focuses on the impacts of alternative farm policies on the debt-to-asset ratios of representative farms for four regions in North Dakota and the second part focuses on the changes in rental rates for cash rented farmland.

Changes in Debt-to-Asset Ratios Under the Current Farm Program Scenarios

Table 2 shows the change in representative farm debt-to-asset ratios under the base scenario for the average farms, the high profit farms and the low profit farms in each of the states' four production regions and for the state as a whole.

For the average profit farm in the state, that ratio is 44.4 percent in 2003; that is 2 percentage points higher than in 1992. The ratio is highest in the South Central Region at 48.6 in 2003. The ratio rises during the forecast period in each of the regions except the North Central Region where it declines 3.4 percentage points over the forecast period.

Table 2. North Dakota Debt/Asset Ratio under the Base Scenario

Year	RRV	NC	SC	WEST	State
Average farms					
1992	0.436	0.394	0.421	0.444	0.424
1993	0.434	0.352	0.416	0.425	0.407
1994	0.450	0.354	0.429	0.427	0.415
1995	0.444	0.351	0.423	0.423	0.410
1996	0.441	0.351	0.421	0.425	0.409
1997	0.440	0.352	0.423	0.427	0.410
1998	0.443	0.354	0.429	0.433	0.415
1999	0.449	0.356	0.441	0.440	0.422
2000	0.458	0.357	0.450	0.445	0.428
2001	0.463	0.358	0.459	0.452	0.433
2002	0.470	0.361	0.472	0.461	0.441
2003	0.469	0.360	0.486	0.461	0.444
Average (1996-2000)	0.446	0.354	0.433	0.434	0.417
High profit farms					
1992	0.298	0.285	0.306	0.354	0.311
1993	0.279	0.254	0.310	0.345	0.297
1994	0.288	0.255	0.321	0.347	0.302
1995	0.285	0.253	0.316	0.344	0.300
1996	0.283	0.256	0.314	0.345	0.299
1997	0.282	0.254	0.315	0.348	0.299
1998	0.283	0.255	0.320	0.352	0.302
1999	0.287	0.256	0.329	0.357	0.307
2000	0.291	0.256	0.338	0.362	0.312
2001	0.294	0.257	0.344	0.367	0.315
2002	0.297	0.258	0.354	0.374	0.321
2003	0.296	0.258	0.365	0.374	0.323
Average (1996-2000)	0.285	0.255	0.323	0.353	0.304
Low profit farms					
1992	0.575	0.488	0.540	0.561	0.541
1993	0.606	0.462	0.561	0.590	0.554
1994	0.622	0.465	0.576	0.594	0.564
1995	0.613	0.460	0.568	0.588	0.558
1996	0.610	0.461	0.567	0.591	0.557
1997	0.610	0.462	0.570	0.596	0.559
1998	0.615	0.466	0.579	0.605	0.566
1999	0.623	0.470	0.593	0.616	0.575
2000	0.631	0.472	0.605	0.626	0.583
2001	0.635	0.474	0.615	0.636	0.590
2002	0.643	0.478	0.632	0.652	0.601
2003	0.644	0.477	0.649	0.654	0.606
Average (1996-2000)	0.617	0.466	0.583	0.607	0.568

For the high profit farm in the state, that ratio is 32.3 percent in 2003. The ratio rises in the state and in the South Central and West regions during the forecast period. The ratio declines in the Red River Valley and the North Central Regions during the forecast period.

For the low profit farm in the state, that ratio is 60.6 percent in 2003. The ratio rises in the state and in the Red River Valley, the South Central Region and the West during the forecast period. In the North Central Region, the ratio declines by 1.1 percentage points. In each region, except the North Central Region, the ratio increases above sixty percent, to a level that places the credit worthiness of the representative farm in some jeopardy.

Changes in Debt-to-Asset Ratios Under the No Farm Program Scenario

Table 3 shows the change in the debt-to-asset ratio under the No Farm Program Scenario. For the average profit representative farm in the state, the ratio rises by 11.7 percentage points during the forecast period to 54.1 percent in 2003. The ratio rises during the forecast period in each of the production regions.

For the high profit farm in the state, that ratio is 39.1 percent in 2003. The ratio rises in each of the production regions, but only in the South Central Region does the ratio reach as high as 46.6 percent in 2003. The ratio rises during the forecast period in each of the production regions.

For the low profit farm in the state, that ratio is 70.9 percent in 2003. Only in the North Central Region is the ratio as low as 62.2 percent at the end of the forecast period, and in the West the ratio is 77.2 percent. Under this scenario, the credit worthiness of this farm is very doubtful at the end of the forecast period.

Changes in Debt-to-Asset Ratios Under the Market Loan Scenario

Table 4 shows the change in the debt-to-asset ratio under the Market Loan Scenario. For the average profit representative farm in the state, the ratio rises by 10 percentage points to 52.4 percent in 2003. The ratio rises during the forecast period in each of the production regions.

For the high profit farm in the state, that ratio is 38 percent in 2003. The ratio rises during the forecast period in each of the production regions. Only in the South Central Region does the ratio rise as high as 45.9 percent by 2003; in the North Central Region, the ratio rises only to 29.8 percent.

For the low profit farm in the state, that ratio is 69.1 percent in 2003. The ratio rises during the forecast period in each of the production regions. In the North Central Region, the ratio rises to 57.7 percent, the low among the regions. The ratio tops 75 percent in the South Central and West Regions. In those two regions, the credit worthiness of this farm is very doubtful at the end of the forecast period.

Table 3. North Dakota Debt/Asset Ratio under No Program Scenario

Year	RRV	NC	SC	WEST	State
Average farms					
1992	0.436	0.394	0.421	0.444	0.424
1993	0.434	0.352	0.416	0.425	0.407
1994	0.449	0.354	0.429	0.426	0.414
1995	0.443	0.350	0.422	0.423	0.410
1996	0.503	0.412	0.536	0.495	0.486
1997	0.536	0.446	0.593	0.543	0.529
1998	0.555	0.467	0.595	0.540	0.539
1999	0.564	0.479	0.597	0.542	0.546
2000	0.560	0.474	0.597	0.543	0.543
2001	0.553	0.469	0.597	0.544	0.541
2002	0.555	0.467	0.602	0.548	0.543
2003	0.552	0.464	0.600	0.548	0.541
Average (1996-2000)	0.543	0.455	0.584	0.532	0.529
High profit farms					
1992	0.298	0.285	0.306	0.354	0.311
1993	0.279	0.254	0.310	0.345	0.297
1994	0.287	0.254	0.320	0.346	0.302
1995	0.284	0.252	0.315	0.344	0.299
1996	0.317	0.291	0.412	0.402	0.356
1997	0.336	0.308	0.465	0.439	0.387
1998	0.346	0.317	0.465	0.436	0.391
1999	0.350	0.322	0.467	0.438	0.394
2000	0.347	0.319	0.466	0.439	0.393
2001	0.343	0.316	0.466	0.440	0.391
2002	0.343	0.316	0.469	0.443	0.393
2003	0.341	0.314	0.466	0.443	0.391
Average (1996-2000)	0.339	0.311	0.455	0.431	0.384
Low profit farms					
1992	0.575	0.488	0.540	0.561	0.541
1993	0.606	0.462	0.561	0.590	0.554
1994	0.620	0.464	0.575	0.593	0.563
1995	0.612	0.459	0.567	0.588	0.557
1996	0.666	0.541	0.681	0.684	0.643
1997	0.689	0.589	0.734	0.748	0.690
1998	0.698	0.620	0.739	0.746	0.701
1999	0.700	0.638	0.745	0.753	0.709
2000	0.690	0.632	0.748	0.756	0.706
2001	0.681	0.626	0.750	0.761	0.704
2002	0.683	0.626	0.760	0.770	0.709
2003	0.681	0.622	0.761	0.772	0.709
Average (1996-2000)	0.688	0.604	0.729	0.737	0.690

Table 4. North Dakota Debt/Asset Ratio under Market Loan Scenario

Year	RRV	NC	SC	WEST	State
Average farms					
1992	0.436	0.394	0.421	0.444	0.424
1993	0.434	0.352	0.416	0.425	0.407
1994	0.450	0.354	0.429	0.427	0.415
1995	0.444	0.351	0.423	0.423	0.410
1996	0.478	0.383	0.481	0.452	0.448
1997	0.493	0.396	0.519	0.468	0.469
1998	0.506	0.408	0.559	0.484	0.489
1999	0.519	0.418	0.577	0.499	0.503
2000	0.527	0.422	0.581	0.508	0.510
2001	0.532	0.426	0.585	0.518	0.515
2002	0.541	0.432	0.592	0.530	0.524
2003	0.539	0.432	0.594	0.532	0.524
Average (1996-2000)	0.505	0.406	0.543	0.482	0.484
High profit farms					
1992	0.298	0.285	0.306	0.354	0.311
1993	0.279	0.254	0.310	0.345	0.297
1994	0.288	0.255	0.321	0.347	0.302
1995	0.285	0.253	0.316	0.344	0.299
1996	0.304	0.273	0.363	0.367	0.327
1997	0.312	0.280	0.398	0.380	0.342
1998	0.319	0.286	0.434	0.392	0.358
1999	0.326	0.291	0.450	0.404	0.367
2000	0.330	0.293	0.452	0.411	0.372
2001	0.332	0.295	0.454	0.419	0.375
2002	0.336	0.298	0.458	0.428	0.380
2003	0.334	0.298	0.459	0.430	0.380
Average (1996-2000)	0.318	0.284	0.419	0.391	0.353
Low profit farms					
1992	0.575	0.488	0.540	0.561	0.541
1993	0.606	0.462	0.561	0.590	0.554
1994	0.622	0.465	0.576	0.594	0.564
1995	0.613	0.460	0.568	0.588	0.557
1996	0.645	0.503	0.627	0.627	0.600
1997	0.656	0.522	0.666	0.649	0.623
1998	0.665	0.540	0.706	0.673	0.646
1999	0.674	0.554	0.726	0.696	0.663
2000	0.676	0.561	0.733	0.711	0.670
2001	0.677	0.567	0.738	0.726	0.677
2002	0.684	0.577	0.749	0.746	0.689
2003	0.683	0.577	0.755	0.751	0.691
Average (1996-2000)	0.663	0.536	0.692	0.671	0.641

Changes in Debt-to-Asset Ratios Under the Revenue Assurance Scenario

Table 5 shows the change in the debt-to-asset ratio under the Revenue Assurance Scenario. For the average profit representative farm in the state, the ratio rises by 8 percentage points to 50.5 percent by 2003. The ratio rises during the forecast period in each of the production regions. In the North Central Region, the ratio rises only to 40.9 percent while in the South Central Region it reaches a high of 57.9 percent by 2003.

For the high profit farm in the state, the ratio rises 5.7 percentage points to 36.8 percent in 2003. Only in the North Central Region is there no increase in the ratio over the forecast period; in each of the other regions the ratio increases over that period.

For the low profit farm in the state, the ratio rises 13 percentage points to 67 percent by 2003. In the North Central Region the ratio rises to 54.6 percent by 2003, the lowest level of the production regions. In both the South Central and West Regions the ratio reaches 74.1 and 72.5, respectively, levels at which credit worthiness is very doubtful.

Changes in Debt-to-Asset Ratios Under Lugar's Scenario

Table 6 shows the ratios under Lugar's Scenario. For the average profit representative farm in the state, the ratio rises 11 percentage points to 53.4 percent in 2003. The ratio rises during the forecast period in each of the production regions. Only in the South Central Region does the ratio rise to the 60 percent level.

For the high profit farm in the state, the ratio rises 5.5 percentage points to 38.6 percent in 2003. The ratio rises during the forecast period in each of the production regions. Only in the South Central Region does the ratio rise as high as 46.3 percent.

For the low profit farm in the state, the ratio rises 16.2 percentage points to 70.3 in 2003. The ratio rises during the forecast period in each of the production regions of the state. Only in the North Central Region does the ratio remain as low as 60.1 percent at the end of the forecast period. In each of the other regions, the ratio ranges from 69.4 percent to 76 percent in 2003. The high ratios mean the low profit representative farms' credit worthiness is very doubtful.

Figures 2 through 4 illustrate the impact of farm program alternatives on debt-to-asset ratios of representative farms.

Table 5. North Dakota Debt/Asset Ratio under Revenue Assurance Scenario

Year	RRV	NC	SC	WEST	State
Average farms					
1992	0.436	0.394	0.421	0.444	0.424
1993	0.434	0.352	0.416	0.425	0.407
1994	0.450	0.354	0.429	0.427	0.415
1995	0.444	0.351	0.423	0.423	0.410
1996	0.457	0.362	0.445	0.436	0.425
1997	0.478	0.382	0.486	0.456	0.450
1998	0.495	0.395	0.527	0.473	0.473
1999	0.512	0.408	0.572	0.491	0.496
2000	0.524	0.414	0.578	0.501	0.504
2001	0.524	0.414	0.579	0.507	0.506
2002	0.527	0.414	0.582	0.514	0.509
2003	0.521	0.409	0.579	0.512	0.505
Average (1996-2000)	0.493	0.392	0.522	0.471	0.470
High profit farms					
1992	0.298	0.285	0.306	0.354	0.311
1993	0.279	0.254	0.310	0.345	0.297
1994	0.288	0.255	0.321	0.347	0.302
1995	0.285	0.253	0.316	0.344	0.299
1996	0.292	0.260	0.333	0.354	0.310
1997	0.303	0.272	0.368	0.370	0.328
1998	0.312	0.279	0.405	0.384	0.345
1999	0.322	0.286	0.445	0.398	0.362
2000	0.328	0.288	0.450	0.406	0.368
2001	0.328	0.288	0.450	0.410	0.369
2002	0.328	0.287	0.452	0.415	0.371
2003	0.325	0.285	0.448	0.414	0.368
Average (1996-2000)	0.311	0.277	0.400	0.382	0.343
Low profit farms					
1992	0.575	0.488	0.540	0.561	0.541
1993	0.606	0.462	0.561	0.590	0.554
1994	0.622	0.465	0.576	0.594	0.564
1995	0.613	0.460	0.568	0.588	0.557
1996	0.625	0.475	0.592	0.605	0.574
1997	0.644	0.502	0.635	0.633	0.603
1998	0.657	0.522	0.677	0.659	0.629
1999	0.671	0.541	0.722	0.685	0.655
2000	0.677	0.549	0.730	0.702	0.664
2001	0.674	0.551	0.733	0.712	0.667
2002	0.675	0.551	0.741	0.724	0.673
2003	0.670	0.546	0.741	0.725	0.670
Average (1996-2000)	0.655	0.518	0.671	0.657	0.625

Table 6. North Dakota Debt/Asset Ratio under Lugar's Scenario

Year	RRV	NC	SC	WEST	State
Average farms					
1992	0.436	0.394	0.421	0.444	0.424
1993	0.434	0.352	0.416	0.425	0.407
1994	0.449	0.354	0.429	0.426	0.414
1995	0.443	0.350	0.422	0.423	0.410
1996	0.449	0.358	0.434	0.431	0.418
1997	0.458	0.368	0.454	0.442	0.431
1998	0.473	0.381	0.486	0.458	0.450
1999	0.492	0.397	0.532	0.479	0.475
2000	0.515	0.413	0.581	0.501	0.502
2001	0.542	0.439	0.597	0.532	0.527
2002	0.557	0.452	0.602	0.536	0.537
2003	0.550	0.448	0.600	0.536	0.534
Average (1996-2000)	0.477	0.383	0.498	0.462	0.455
High profit farms					
1992	0.298	0.285	0.306	0.354	0.311
1993	0.279	0.254	0.310	0.345	0.297
1994	0.287	0.254	0.320	0.346	0.302
1995	0.284	0.252	0.315	0.344	0.299
1996	0.288	0.258	0.325	0.350	0.305
1997	0.292	0.263	0.341	0.359	0.314
1998	0.300	0.271	0.368	0.372	0.328
1999	0.310	0.280	0.408	0.388	0.346
2000	0.323	0.288	0.452	0.405	0.367
2001	0.337	0.303	0.463	0.430	0.383
2002	0.345	0.309	0.466	0.433	0.388
2003	0.340	0.306	0.463	0.433	0.386
Average (1996-2000)	0.303	0.272	0.379	0.375	0.332
Low profit farms					
1992	0.575	0.488	0.540	0.561	0.541
1993	0.606	0.462	0.561	0.590	0.554
1994	0.620	0.464	0.575	0.593	0.563
1995	0.612	0.459	0.567	0.588	0.557
1996	0.618	0.471	0.581	0.599	0.567
1997	0.626	0.484	0.602	0.615	0.582
1998	0.640	0.502	0.637	0.638	0.604
1999	0.657	0.525	0.684	0.669	0.634
2000	0.674	0.548	0.732	0.700	0.664
2001	0.693	0.585	0.750	0.744	0.693
2002	0.701	0.604	0.759	0.754	0.705
2003	0.694	0.601	0.760	0.756	0.703
Average (1996-2000)	0.643	0.506	0.647	0.644	0.610

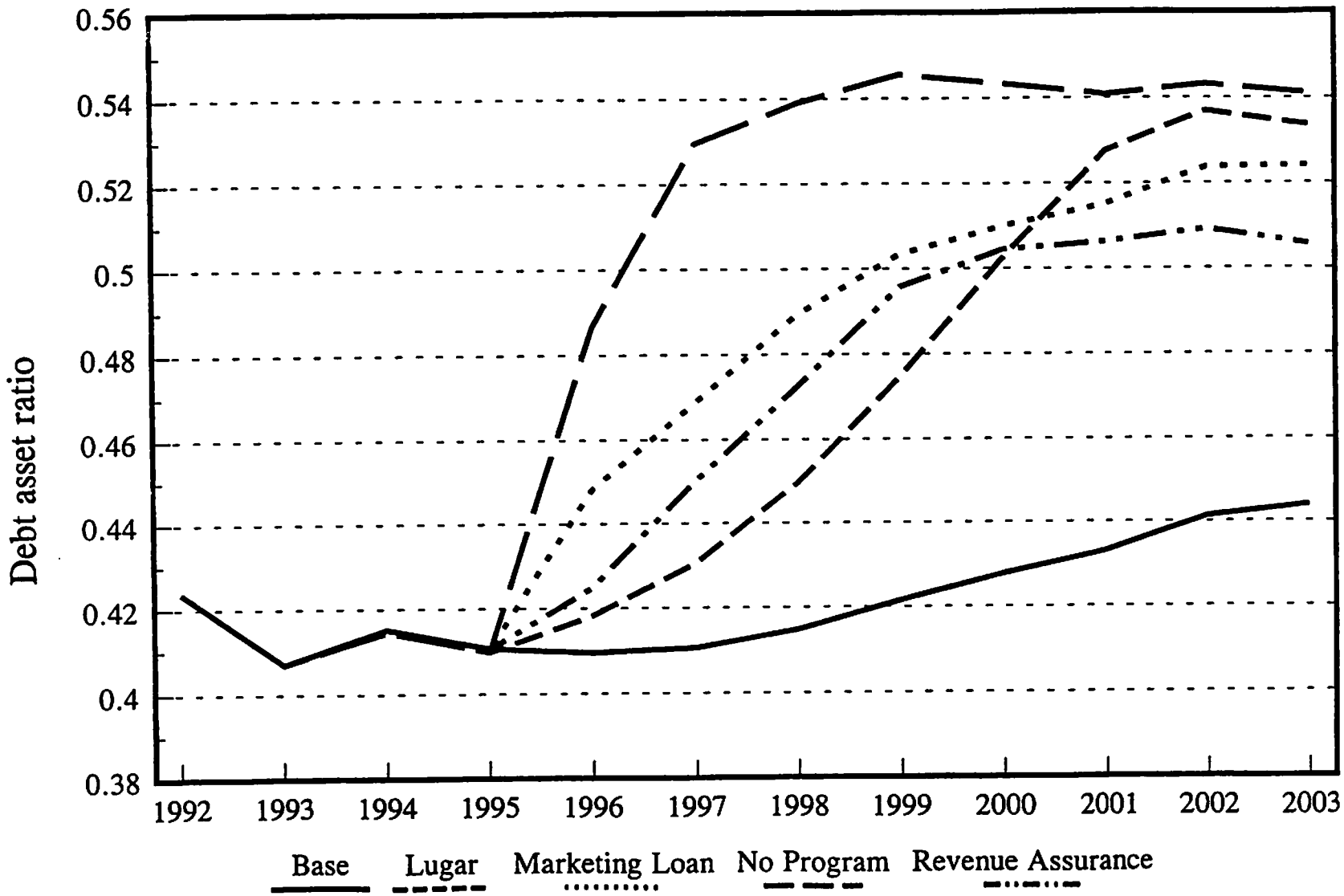


Figure 2. Debt/Asset Ratio for Average Profit Farms Under the Base and Alternative Farm Policy Scenarios.

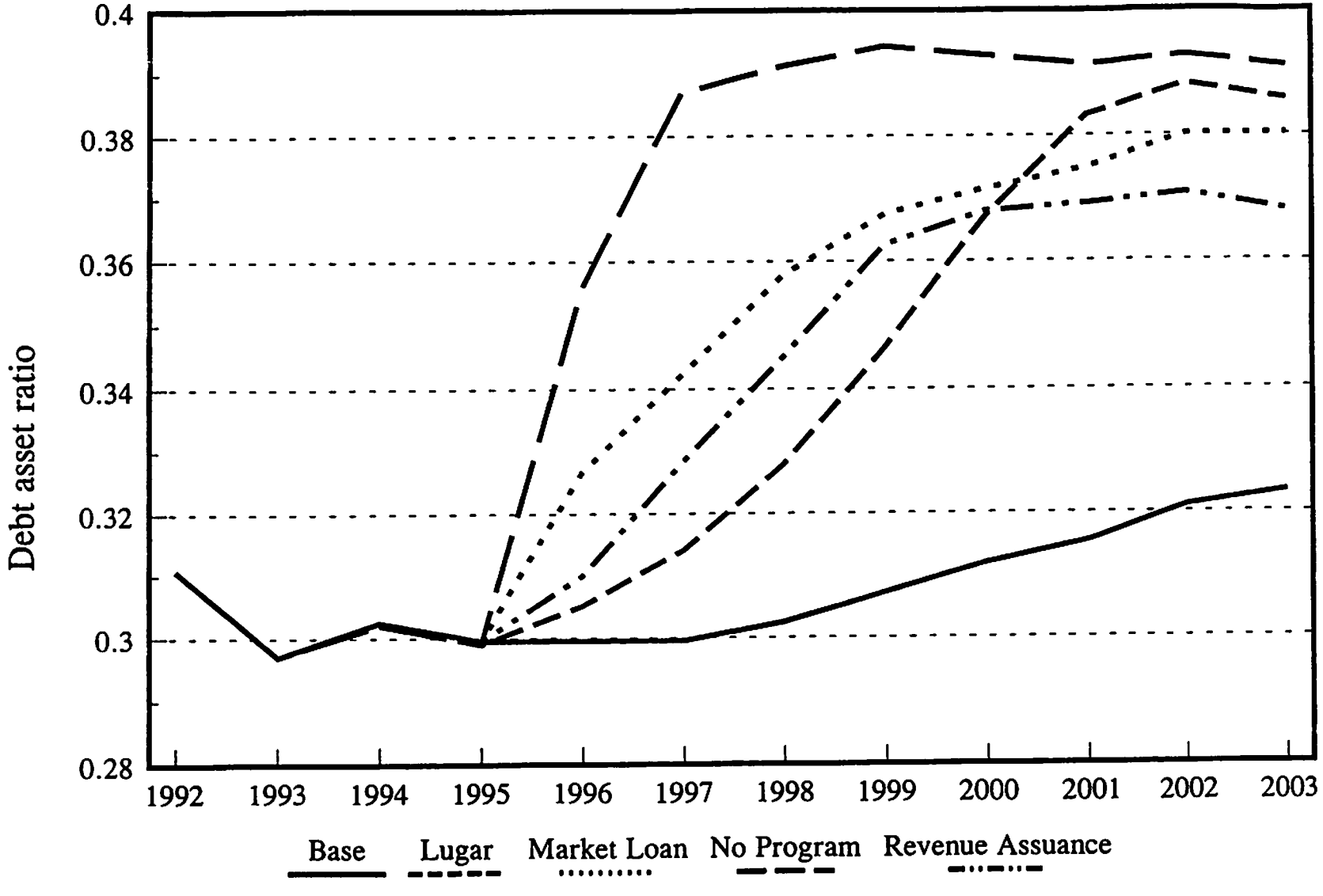


Figure 3. Debt/Asset Ratio for High Profit Farms Under the Base and Alternative Farm Policy Scenarios.

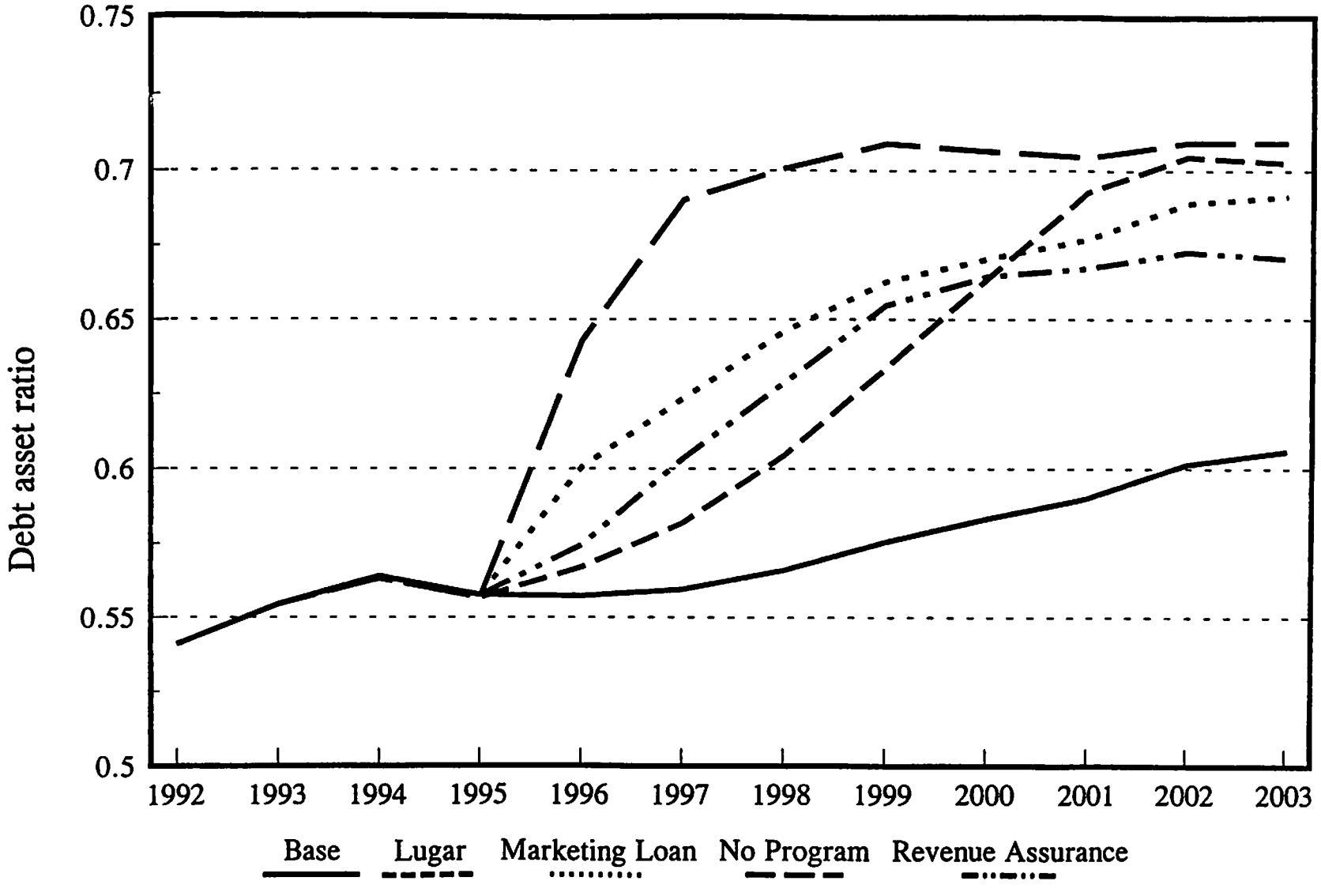


Figure 4. Debt/Asset Ratio for Low Profit Farms Under the Base and Alternative Farm Policy Scenarios.

Changes in Debt-to-Asset Ratios Under Budget Constraints

Preliminary Republican and Democrat budget proposal constraints on federal spending as of early May 1995, are applied to the base scenario to develop debt-to-asset ratios. Neither of these alternatives requires as large a reduction in the government safety net under North Dakota program crops as did the program alternatives considered in the previous section.

A Republican Budget Proposal Constraint

Table 7 shows the debt-to-asset ratios under the Republican budget proposal constraint. For the average profit representative farm in the state, the ratio rises 4.7 percentage points to 47.1 percent by 2003. The ratio declines to 38.1 percent in the North Central Region over the forecast period. In each of the other production regions, the ratio also rises; but only in the South Central Region does the ratio rises as high as 52.8 by the end of the forecast period.

For the high profit farm in the state, the ratio rises 3.2 percentage points to 34.3 percent in 2003. In the North Central Region, the ratio declines by 1.6 percentage points to 26.9 percent over the forecast period. The highest ratio at the end of the forecast period is 40.3 percent in the South Central Region.

For the low profit farm in the state, the ratio rises 9.3 percentage points to 63.4 percent in 2003. The ratio rises in each production region but only in the South Central and West Regions does it reach as high as 69.1 and 68.5 percent, respectively. Ratios higher than 65 percent suggest questionable credit worthiness for the representative farms.

A Democrat Budget Proposal Constraint

Table 8 shows the debt-to-asset ratios under the Democrat budget proposal constraint. For the average representative farm in the state, the ratio rises 3.6 percentage points to 46 percent in 2003. The ratio rises in each of the production regions, with the exception of the North Central Region where it declines to 37.3 percent by the end of the forecast period. Only in the South Central Region does the ratio rise as high as 50.8 percent.

For the high profit farm in the state, the ratio rises 2.4 percentage points to 33.5 percent in 2003. The ratio declines over the period in the North Central Region, but rises in each of the other production regions.

Table 7. North Dakota Debt/Asset Ratio under Republican Scenario

Year	RRV	NC	SC	WEST	State
Average farms					
1992	0.436	0.394	0.421	0.444	0.424
1993	0.434	0.352	0.416	0.425	0.407
1994	0.450	0.354	0.429	0.427	0.415
1995	0.444	0.351	0.423	0.423	0.410
1996	0.450	0.360	0.438	0.433	0.420
1997	0.459	0.370	0.458	0.445	0.433
1998	0.468	0.378	0.480	0.457	0.446
1999	0.476	0.382	0.500	0.466	0.456
2000	0.481	0.380	0.506	0.470	0.459
2001	0.486	0.382	0.516	0.476	0.465
2002	0.492	0.383	0.529	0.485	0.472
2003	0.490	0.381	0.528	0.484	0.471
Average (1996-2000)	0.467	0.374	0.447	0.454	0.443
High profit farms					
1992	0.298	0.285	0.306	0.354	0.311
1993	0.279	0.254	0.310	0.345	0.297
1994	0.288	0.255	0.321	0.347	0.302
1995	0.285	0.253	0.316	0.344	0.300
1996	0.288	0.261	0.328	0.352	0.307
1997	0.293	0.264	0.345	0.362	0.316
1998	0.297	0.269	0.363	0.371	0.325
1999	0.302	0.271	0.380	0.378	0.333
2000	0.304	0.269	0.387	0.381	0.335
2001	0.306	0.270	0.393	0.386	0.339
2002	0.310	0.271	0.404	0.393	0.344
2003	0.307	0.269	0.403	0.392	0.343
Average (1996-2000)	0.297	0.267	0.361	0.369	0.323
Low profit farms					
1992	0.575	0.488	0.540	0.561	0.541
1993	0.606	0.462	0.561	0.590	0.554
1994	0.622	0.465	0.576	0.594	0.564
1995	0.613	0.460	0.568	0.588	0.558
1996	0.619	0.472	0.585	0.603	0.570
1997	0.627	0.486	0.607	0.619	0.585
1998	0.635	0.498	0.631	0.637	0.600
1999	0.643	0.505	0.653	0.652	0.613
2000	0.646	0.503	0.661	0.659	0.617
2001	0.649	0.506	0.673	0.670	0.624
2002	0.656	0.509	0.690	0.684	0.635
2003	0.654	0.506	0.691	0.685	0.634
Average (1996-2000)	0.634	0.493	0.627	0.634	0.597

Table 8. North Dakota Debt/Asset Ratio under Democrat Scenario

Year	RRV	NC	SC	WEST	State
Average farms					
1992	0.436	0.394	0.421	0.444	0.424
1993	0.434	0.352	0.416	0.425	0.407
1994	0.450	0.354	0.429	0.427	0.415
1995	0.444	0.351	0.423	0.423	0.410
1996	0.447	0.357	0.433	0.431	0.417
1997	0.452	0.363	0.445	0.438	0.424
1998	0.458	0.368	0.459	0.447	0.433
1999	0.465	0.372	0.475	0.456	0.442
2000	0.472	0.372	0.484	0.461	0.447
2001	0.478	0.374	0.495	0.468	0.454
2002	0.485	0.376	0.509	0.477	0.462
2003	0.483	0.373	0.508	0.476	0.460
Average (1996-2000)	0.459	0.366	0.459	0.447	0.433
High profit farms					
1992	0.298	0.285	0.306	0.354	0.311
1993	0.279	0.254	0.310	0.345	0.297
1994	0.288	0.255	0.321	0.347	0.302
1995	0.285	0.253	0.316	0.344	0.300
1996	0.287	0.260	0.324	0.350	0.305
1997	0.289	0.260	0.333	0.356	0.310
1998	0.292	0.263	0.345	0.363	0.316
1999	0.296	0.265	0.359	0.370	0.322
2000	0.299	0.265	0.368	0.374	0.326
2001	0.302	0.266	0.375	0.380	0.331
2002	0.306	0.267	0.386	0.386	0.336
2003	0.304	0.265	0.385	0.386	0.335
Average (1996-2000)	0.292	0.262	0.346	0.363	0.316
Low profit farms					
1992	0.575	0.488	0.540	0.561	0.541
1993	0.606	0.462	0.561	0.590	0.554
1994	0.622	0.465	0.576	0.594	0.564
1995	0.613	0.460	0.568	0.588	0.558
1996	0.616	0.469	0.580	0.599	0.566
1997	0.620	0.477	0.593	0.610	0.575
1998	0.627	0.485	0.610	0.624	0.586
1999	0.635	0.491	0.628	0.638	0.598
2000	0.641	0.492	0.640	0.646	0.605
2001	0.645	0.495	0.652	0.658	0.613
2002	0.652	0.498	0.670	0.673	0.623
2003	0.651	0.496	0.672	0.675	0.623
Average (1996-2000)	0.628	0.483	0.610	0.624	0.586

For the low profit farm in the state, the ratio rises 8.2 percentage points to 62.3 percent in 2003. In three of the production regions, the ratio rises to 65.1 percent or higher. Only in the North Central Region does the ratio remain below 50 percent. Ratios over 65 percent suggest questionable credit worthiness for the representative farms.

Figures 5 to 7 illustrate the impact of budget proposal constraints on the debt-to-asset ratios of representative farms.

Rental Income for Farmland

Analyses of the impact of farm program changes have thus far focused on the effect on farmers. However, farm program changes will also affect the income earning capacity of farmland rented to operating farmers by investors. Many of these investors are retired persons who are dependent upon income from this farmland to maintain their retirement lifestyle.

The changes in cash rental rates developed in this analysis are for land rented for the production of the government program crops (hard red spring wheat, durum, barley, corn and soybeans). Changes in cash rental rates affect only that land that is cash rented. Owners of share rented land will experience changes in income as well, but through changes in the amount of net income from their share of the crop produced.

Among the farms in the Farm and Ranch Management Association program, farms operate more rented land than owned land. Table 9 indicates the acreages of owned and rented land, both cash and share rented, for each of the representative farms in each of the state's production regions.

Table 10 indicates changes in cash rental rates for North Dakota and for each of the state's four production regions under the Base Farm Program Scenario (essentially a continuation of current farm programs). Rental rates per acre fall $1.47 per acre from 1993 to 2003.

Under the No Farm Program Scenario, Table 11, cash rental rates for the state fall $20.67 per acre from 1993 to 2003. Percentage declines are highest in the Red River Valley and lowest in the North Central production regions.

Under the Market Loan Scenario, Table 12, cash rental rates for the state fall $16.25 per acre from 1993 to 2003. Percentage declines are largest in the South Central and smallest in the North Central production regions.

Under the Revenue Assurance Scenario, Table 13, cash rental rates for the state fall $15.11 per acre from 1993 to 2003. Percentage declines are largest in the South Central and smallest in the North Central production regions.

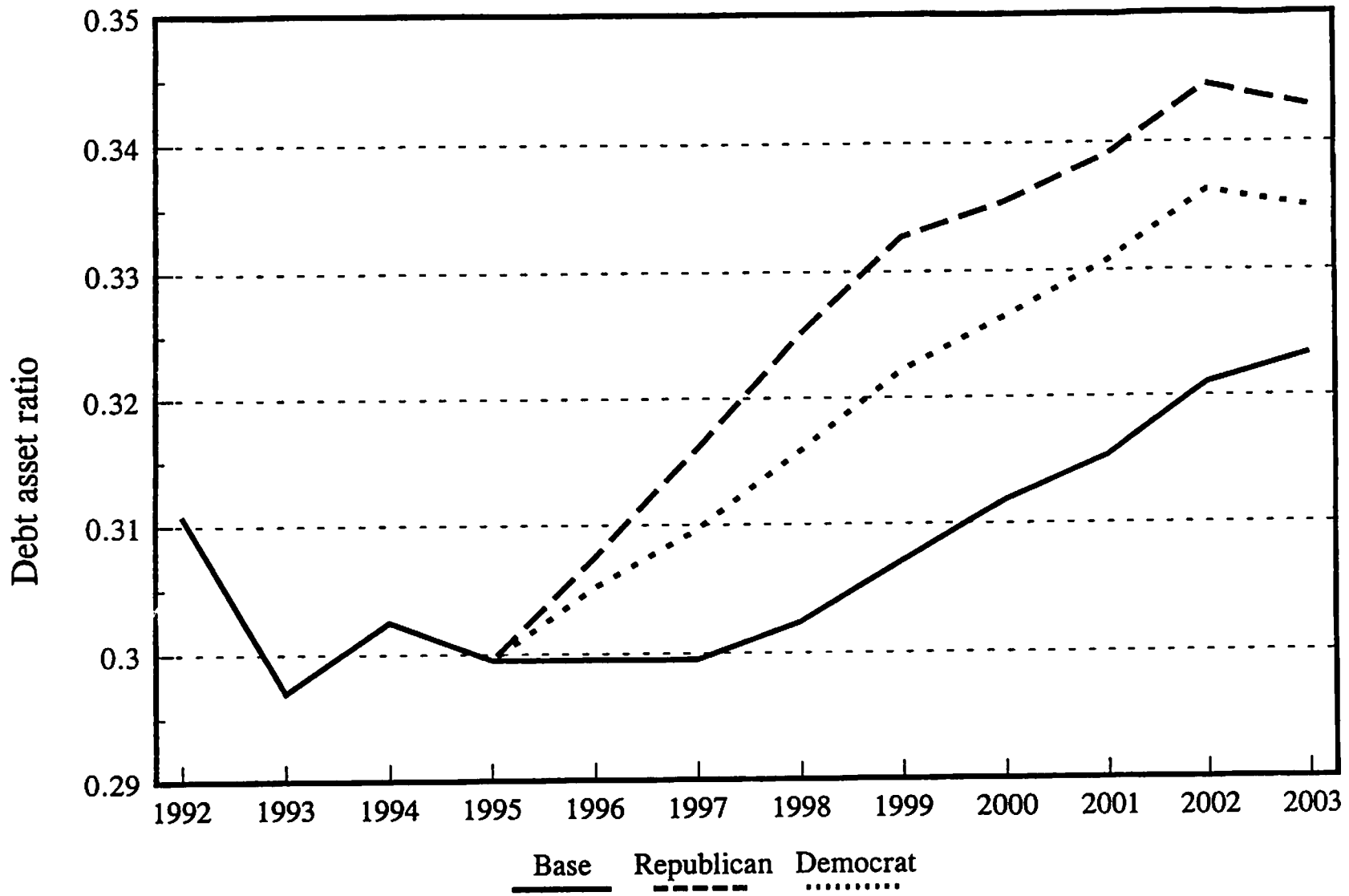


Figure 5. Debt/Asset Ratio for High Profit Farms Under the Base and Alternative Farm Policy Scenarios.

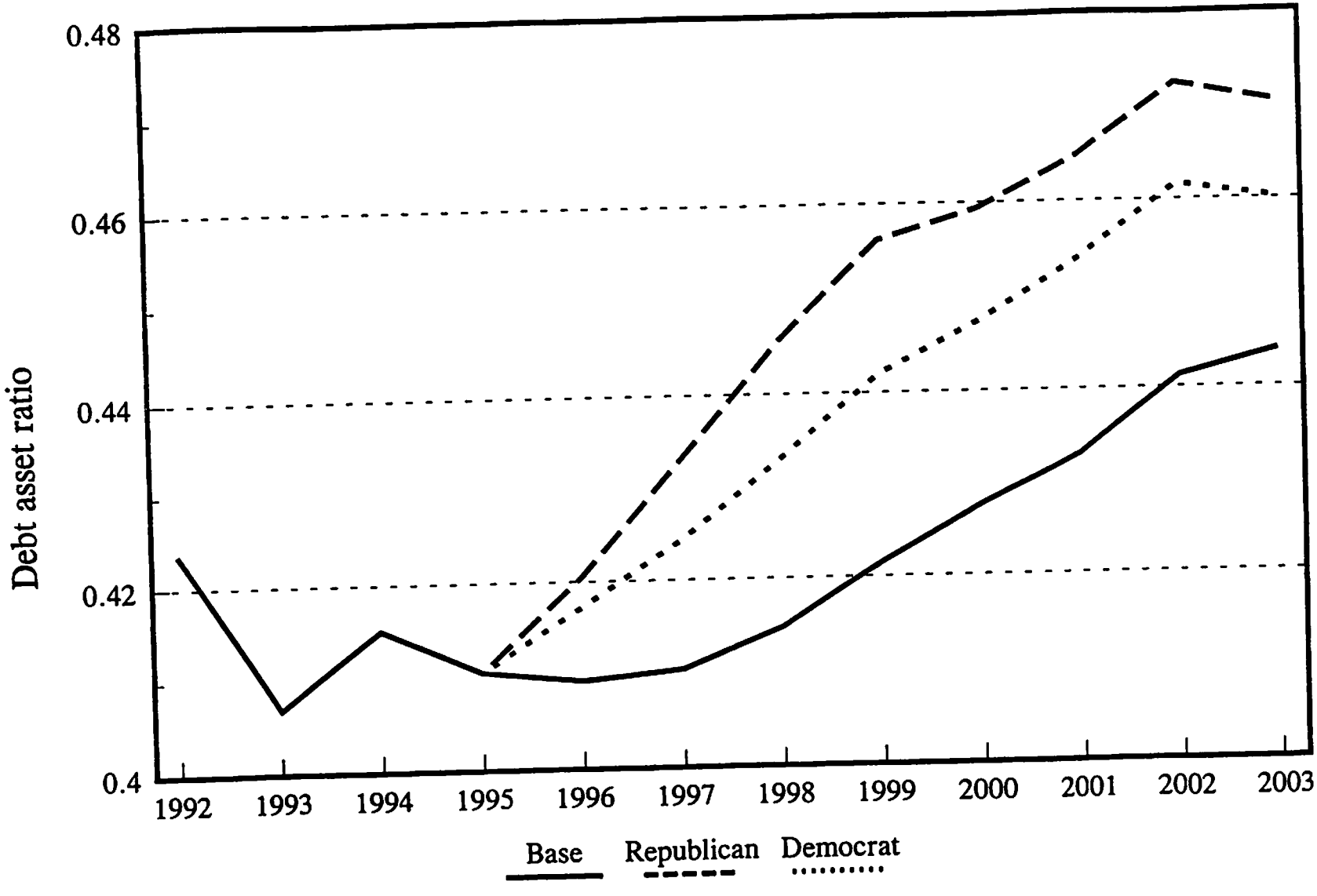


Figure 6. Debt/Asset Ratio for Average Profit Farms Under the Base and Alternative Farm Policy Scenarios.

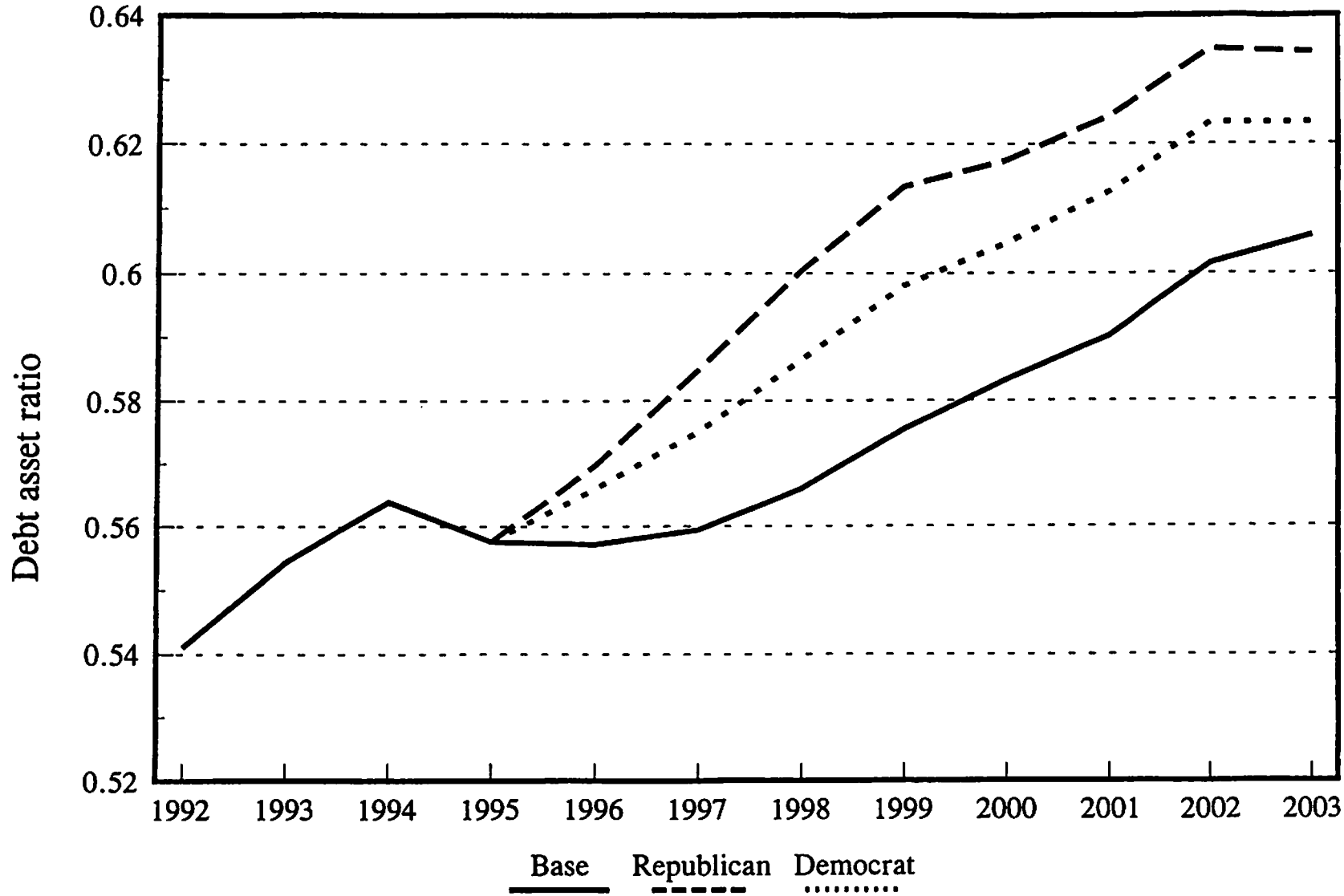


Figure 7. Debt/Asset Ratio for Low Profit Farms Under the Base and Alternative Farm Policy Scenarios.

Table 9. Ownership and Rental Characteristics of Representative Farms in North Dakota

	RRV			NC			SC			WEST		
Profit Level	High	Avg	Low	High	Avg	Low	High	Avg	Low	High	Avg	Low
	acres											
Owned	316	217	127	371	385	256	1021	504	300	714	489	253
Share rent	145	196	203	513	358	185	372	245	225	78	77	52
Cash rent	1100	821	1226	739	438	436	806	620	441	708	451	287

Table 10. Cash Rent under the Base Scenario for North Dakota Farms in the Analysis

	RRV	NC	SC	WEST	State
	dollars/acre				
1993	55.19	29.21	30.62	30.56	36.40
1994	55.99	29.64	31.06	31.00	36.92
1995	55.29	29.34	33.42	30.89	37.24
1996	54.21	29.34	35.42	31.13	37.53
1997	53.41	29.55	34.98	31.43	37.34
1998	52.89	29.74	35.58	31.83	37.51
1999	53.72	29.99	35.87	31.71	37.82
2000	54.20	30.01	35.62	31.15	37.74
2001	53.83	29.85	34.61	30.08	37.09
2002	52.35	29.62	33.28	28.89	36.04
2003	50.36	29.44	32.16	27.77	34.93
Average % Change (1993-2003)	-8.7	0.8	5.0	-9.1	-4.0
Average % Change (1996-2000)	0.0	2.3	0.6	0.1	0.6

Table 11. Cash Rent under the No Program Scenario for North Dakota Farms in the Analysis

	RRV	NC	SC	WEST	State
	----------	----------	dollars/acre	----------	----------
1993	55.19	29.21	30.62	30.56	36.40
1994	55.99	29.64	31.06	31.00	36.92
1995	55.29	29.34	30.72	30.89	36.56
1996	54.21	29.34	30.22	30.94	36.18
1997	53.41	29.55	29.99	31.36	36.08
1998	48.80	27.58	26.57	28.21	32.79
1999	42.22	23.92	21.16	22.38	27.42
2000	33.38	18.99	15.50	16.57	21.11
2001	27.06	15.61	12.95	14.10	17.43
2002	23.39	14.11	12.95	14.38	16.21
2003	21.67	13.93	12.95	14.38	15.73
Average % Change (1993-2003)	-60.7	-52.3	-57.7	-53.0	-56.8
Average % Change (1996-2000)	-38.4	-35.3	-48.7	-46.5	-41.6

Table 12. Cash Rent under the Market Loan Scenario for North Dakota Farms in the Analysis

	RRV	NC	SC	WEST	State
	----------	----------	dollars/acre	----------	----------
1993	55.19	29.21	30.62	30.56	36.40
1994	55.99	29.64	31.06	31.00	36.92
1995	55.29	29.34	33.42	30.89	37.24
1996	54.21	29.34	35.42	31.13	37.53
1997	53.44	29.56	35.00	31.43	37.36
1998	50.43	28.55	32.21	29.71	35.23
1999	46.88	26.72	26.55	25.92	31.52
2000	41.71	24.06	22.04	22.75	27.64
2001	37.47	22.07	16.48	20.01	24.01
2002	33.87	20.79	12.95	18.06	21.42
2003	30.90	20.04	12.95	16.70	20.15
Average % Change (1993-2003)	-44.0	-31.4	-57.7	-45.3	-44.6
Average % Change (1996-2000)	-23.1	-18.0	-37.8	-26.9	-26.4

Table 13. Cash Rent under the Revenue Assurance Scenario for North Dakota Farms in the Analysis

	RRV	NC	SC	WEST	State
	dollars/acre				
1993	55.19	29.21	30.62	30.56	36.40
1994	55.99	29.64	31.06	31.00	36.92
1995	55.29	29.34	33.42	30.89	37.24
1996	54.21	29.34	35.42	31.13	37.53
1997	53.43	29.56	34.99	31.43	37.35
1998	51.78	29.30	34.14	30.95	36.54
1999	49.65	28.25	30.47	28.38	34.19
2000	45.68	26.28	25.71	24.99	30.67
2001	40.95	24.05	21.24	21.77	27.00
2002	36.43	22.34	16.03	19.30	23.53
2003	32.94	21.35	12.95	17.93	21.29
Average % Change (1993-2003)	-40.3	-26.9	-57.7	-41.3	-41.5
Average % Change (1996-2000)	-15.7	-10.4	-27.4	-19.7	-18.3

Under the Lugar Scenario, Table 14, cash rental rates for the state fall $13.58 per acre from 1993 to 2003. Percentage declines are largest in the South Central and smallest in the North Central production regions.

Figures 8 and 9 show the cash rent paid by farmers under alternative policy scenarios.

Tables 15 and 16 indicate changes in the cash rental rates under the Republican and Democrat Budget Constraint Scenarios.

Cash rental rates for the state fall $7.30 per acre under the Republican Scenario and fall $5.20 per acre under the Democrat Scenario from 1993 to 2003.

For both scenarios, percentage declines in rental rates are greatest in the West production region and lowest in the North Central production region.

CONCLUSION

The farm program alternatives have, in most cases, adverse impacts on representative farm debt-to-asset ratios. These ratios represent a summary indication of the capacity to withstand loss in a farm business and, consequently, the farm's creditworthiness. Generally, lenders will be very cautious about lending to farms with debt-to-asset ratios approaching 60 percent, especially if the farms have been steadily losing equity. Lenders will likely not lend to farmers with debt-to-asset ratios above 65 percent, where there is a history of equity loss, unless the loan carries a Farmers Home Administration guarantee. Even then, as debt-to-asset ratios climb above 70 percent along with a history of equity loss, most lenders would regard the business as uncredit worthy and likely to fail.

The farm program alternatives have caused rises in debt-to-asset ratios in most instances, including the base scenario. However, the average profit representative farms in each production region and under each farm program alternatives appear likely to remain credit worthy. Ratios do not increase above 60 percent. Ratios range from a low of 40.9 percent for the North Central Production Region under the Revenue Assurance Scenario to a high of 60 percent in the South Central Production Region under both the No Program Scenario and Lugar's Scenario at the end of the forecast period in 2003.

Table 14. Cash Rent under the Lugar's Scenario for North Dakota Farms in the Analysis

	RRV	NC	SC	WEST	State
	dollars/acre				
1993	55.19	29.21	30.62	30.56	36.40
1994	55.99	29.64	31.06	31.00	36.92
1995	55.29	29.34	33.42	30.89	37.24
1996	54.21	29.34	33.82	30.94	37.08
1997	53.41	29.55	35.39	31.36	37.43
1998	52.15	29.41	34.66	31.20	36.86
1999	51.28	28.89	33.64	30.47	36.07
2000	48.98	27.57	31.13	28.52	34.05
2001	45.48	25.79	27.47	25.72	31.11
2002	40.70	23.74	21.26	22.38	27.02
2003	34.99	21.38	16.31	18.59	22.82
Average % Change (1993-2003)	-36.6	-26.8	-46.7	-39.2	-37.3
Average % Change (1996-2000)	-9.7	-6.0	-7.9	-7.8	-8.2

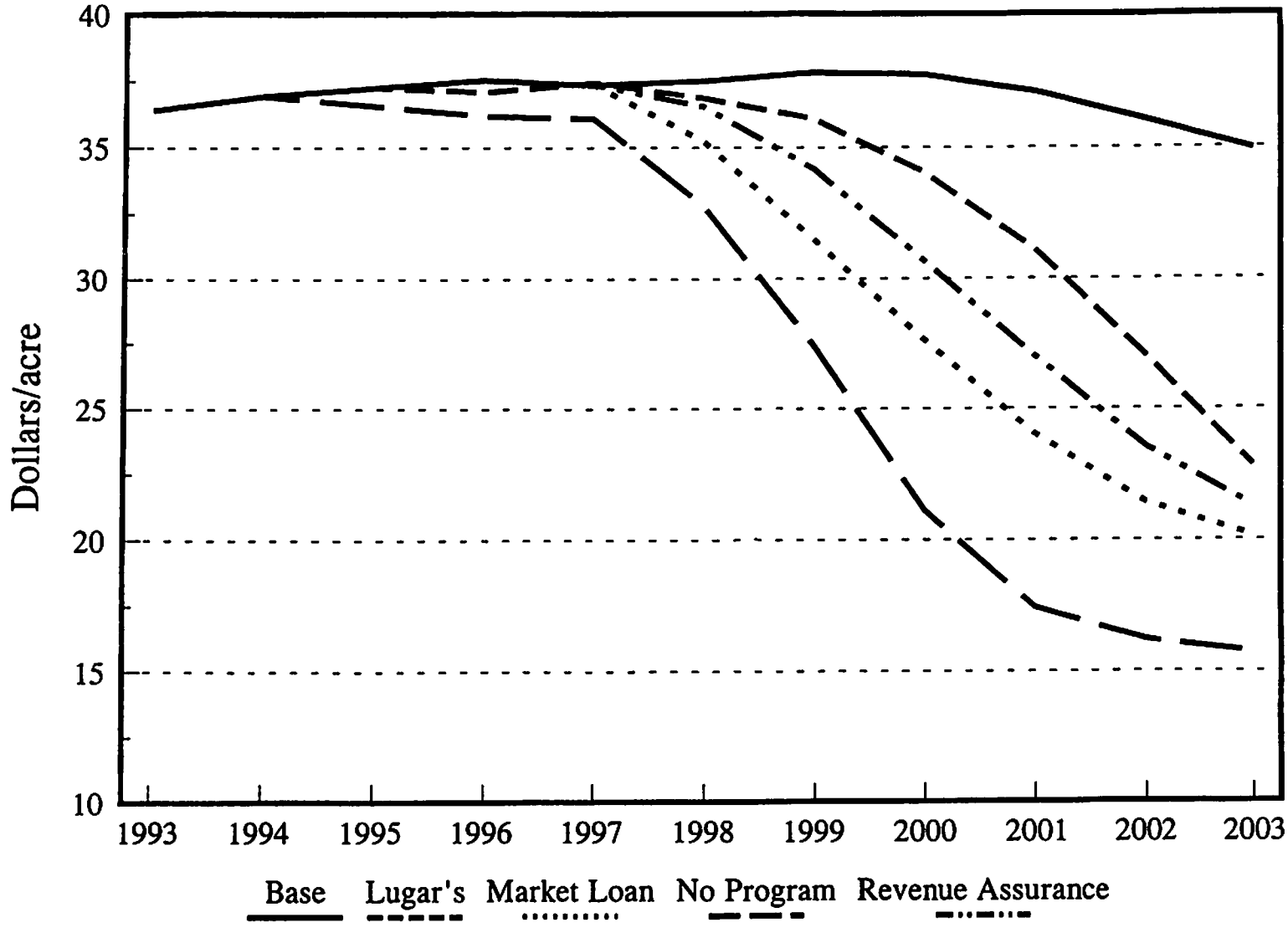


Figure 8. Cash Rent Paid by North Dakota Farmers for the Base and Alternative Scenarios.

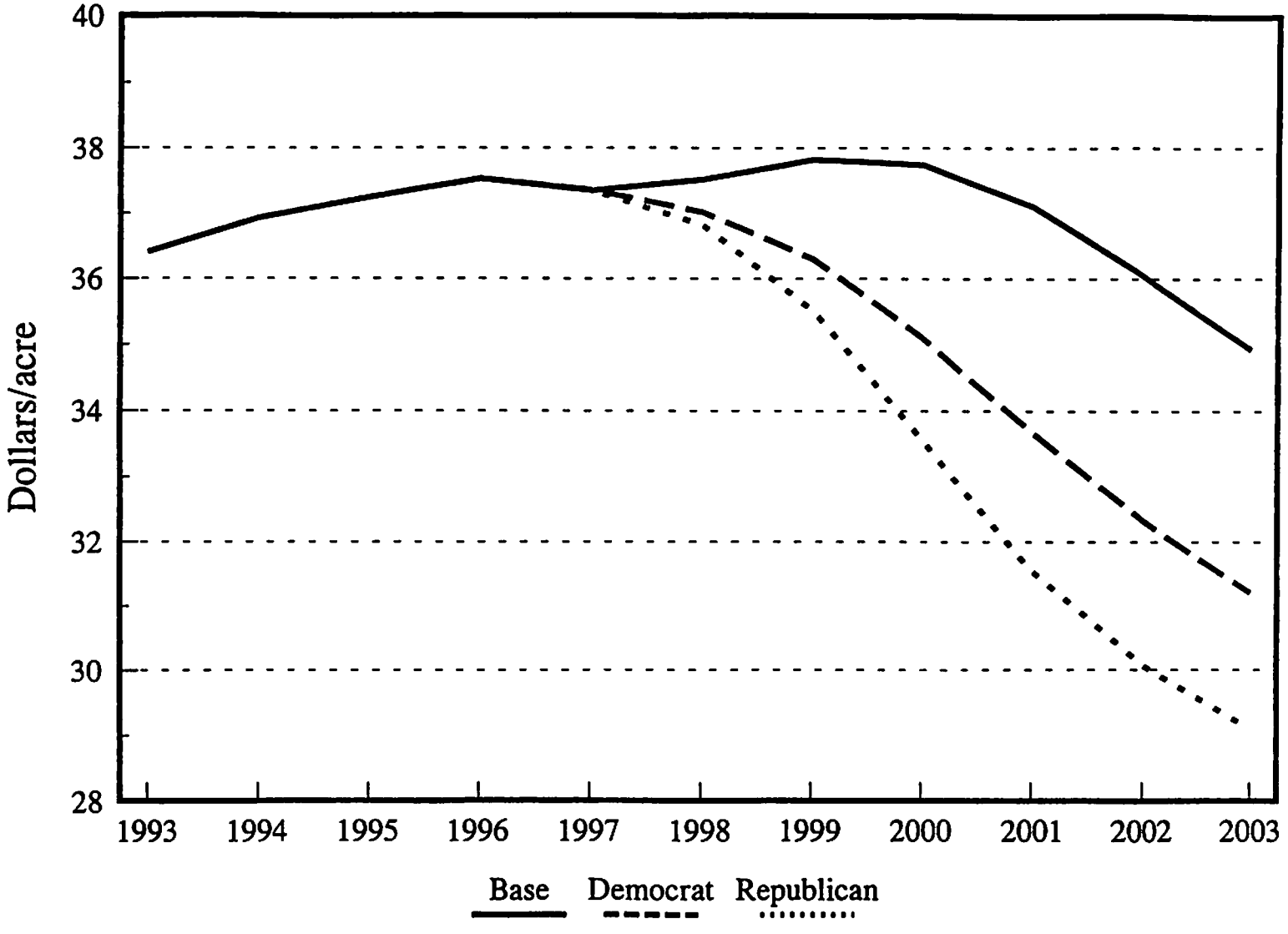


Figure 9. Cash Rent Paid by North Dakota Farmers for the Base and Alternative Scenarios.

Table 15. Cash Rent under the Republican Scenario for North Dakota Farms in the Analysis

	RRV	NC	SC	WEST	State
	dollars/acre				
1993	55.19	29.21	30.62	30.56	36.40
1994	55.99	29.64	31.06	31.00	36.92
1995	55.29	29.34	33.42	30.89	37.24
1996	54.21	29.34	35.42	31.13	37.53
1997	53.41	29.55	34.98	31.43	37.34
1998	52.20	29.38	34.53	31.12	36.81
1999	51.42	28.79	32.44	29.38	35.51
2000	49.61	27.59	29.80	27.22	33.56
2001	47.31	26.41	27.29	25.15	31.54
2002	44.94	25.72	25.75	23.85	30.07
2003	42.81	25.50	25.03	23.07	29.10
Average % Change (1993-2003)	-22.4	-12.7	-18.2	-24.5	-20.0
Average % Change (1996-2000)	-8.5	-6.0	-15.9	-12.6	-10.6

Table 16. Cash Rent under the Democrat Scenario for North Dakota Farms in the Analysis

	RRV	NC	SC	WEST	State
	dollars/acre				
1993	55.19	29.21	30.63	30.56	36.40
1994	55.99	29.64	31.07	31.00	36.92
1995	55.29	29.34	33.43	30.89	37.24
1996	54.21	29.34	35.43	31.13	37.53
1997	53.41	29.55	34.99	31.43	37.35
1998	52.40	29.48	34.84	31.32	37.01
1999	52.19	29.20	33.61	30.17	36.29
2000	51.26	28.46	31.99	28.69	35.10
2001	49.78	27.72	30.12	27.05	33.67
2002	47.75	27.21	28.61	25.76	32.33
2003	45.56	26.94	27.57	24.74	31.20
Average % Change (1993-2003)	-17.4	-7.8	-10.0	-19.1	-14.3
Average % Change (1996-2000)	-5.4	-3.0	-9.7	-7.8	-6.5

High profit representative farms appear to be able to weather each of the farm program alternatives without undue stress to the farm business financial strength, even though ratios increase under most alternative farm programs. Ratios range from a low of 28.5 percent for the North Central Production Region under the Revenue Assurance Scenario to highs of 46.6 percent for the South Central Production Region under the No Program Scenario and 46.3 percent for the same production region under Lugar's Scenario at the end of the forecast period in 2003.

In the low profit representative farms, erosion in equity pushes debt-to-asset ratios as high as 76.1 percent for the South Central Production Region and 77.2 percent for the West Production Region under the No Program Scenario at the end of the forecast period in 2003. Ratios for these same two production regions exceed 75 percent under the Market Loan Scenario, top 72 percent under the Revenue Assurance Scenario, and top 75 percent under Lugar's Scenario by 2003. Only for the North Central Production Region under the Market Loan Scenario and under the Revenue Assurance Scenario are ratios less than 60 percent in 2003. Most of the low profit representative farms will be severely stressed under the first four farm program scenarios.

The preliminary Republican and Democrat Budget Proposal Constraints are generally more favorable to farmers than the other farm program reduction alternatives. None the less, low profit representative farms in three of four production regions in the state exhibit debt-to-asset ratios of 65 percent or above under both proposals. Only the North Central Production Region has a ratio remain below 51 percent at the end of the forecast period in 2003.

Differences in debt-to-asset ratios between the two preliminary budget proposals tend to be less than two percentage points for the low profit representative farms, with the Republican proposal resulting in the slightly higher ratios. High profit representative farms in the North Central production region are able to modestly reduce their debt-to-asset ratios over the forecast period under both the preliminary Republican and Democrat budget proposals.

Cash rental rates decline under each of the alternative farm program scenarios. Under the first four farm program scenarios, declines in cash rental rates were largest for the No Farm Program alternative and smallest under the Lugar Scenario on a statewide basis. Declines were as large as 60.7 percent in the Red River Valley Production Region for the No Program Scenario and as small as 26.8 percent for the North Central Production Region under Lugar's Scenario by the end of the forecast period in 2003.

The preliminary Republican and Democrat Budget Constraint Scenarios resulted in much smaller reductions in cash rental rates statewide, than did the other four farm program scenarios. Cash rental rates declined by as little as 12.7 percent in the North Central Production Region and by as much as 24.5 percent in the West Production Region under the Republican Scenario by the end of the forecast period in 2003. Under the Democrat Scenario cash rental rates declined by as little as 7.8 percent in the North Central Production Region and as much as 19.1 percent in the West Production Region by 2003.

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