

IMPACTS OF INCREASED MARKETING LOAN RATES

Prepared at the Request
of Rep. Earl Pomeroy

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Impacts of Increased Marketing Loan Rates

Executive Summary

At the request of Representative Earl Pomeroy, FAPRI has analyzed two scenarios of alternative marketing loan rates. Impacts of the scenarios are measured against the FAPRI January 2000 baseline projections. In order to provide a more complete picture of the potential impacts of the proposed changes, the analysis incorporates the major sources of variability that provide uncertainties around the baseline projections. Variability is introduced into the FAPRI modeling system through multiple draws on data such as yields, costs of production, and other variables that have an unpredictable component. The analysis not only evaluates impacts at the average, but also determines the range of possible impacts based on the resulting variability of supply, demand and price.

Key Assumptions

- In the first scenario (Pomeroy #1), the loan rate for soybeans is increased to \$5.72 per bushel beginning with the 2001 crop. Minor oilseeds were increased to maintain the current relationship with soybeans.
- Loan rates for grains and cotton are increased by relatively larger amounts. For example, the loan rate for corn is increased from the current level of \$1.89 per bushel up to \$2.53. Wheat would rise from \$2.58 to \$3.53. Complete loan rate assumptions are included in Table 1.
- Under the second scenario (Pomeroy #2), loan rates for oilseeds are maintained at current levels, while rates for grains and cotton are increased. The loan rates for corn and wheat increase to \$2.33 and \$3.25, respectively.

Key Results

- Under Pomeroy #1, total area planted to the major crops would increase by 3-5 million acres above baseline levels due to the increased loan rates. Acreage would be expected to increase above the baseline by 1-3 million acres under Pomeroy #2.
- Per-acre net returns above variable costs of production for the 8 major crops would average \$32 and \$17 above baseline levels for Pomeroy #1 and #2, respectively.
- Due to higher LDP's and marketing loan gains, net CCC outlays would increase by \$10-13 billion per year above the baseline under Pomeroy #1. Pomeroy #2 would add \$5-8 billion per year to baseline outlays.
- Net farm income would average \$49.1 billion over 2001-09 under Pomeroy #1, compared with \$41.5 over that same period under baseline policies. Pomeroy #2 would give average net farm income of \$45.7 billion.
- Higher loan rates reduce the probability of low producer returns while increasing the probability of high government outlays.

Introduction

At the request of Representative Earl Pomeroy of North Dakota, the Food and Agricultural Policy Research Institute (FAPRI) analyzed the impacts of alternative marketing loan rates for the major crops. The impacts of the scenarios are measured against FAPRI's January 2000 baseline projections, details of which are found in FAPRI-UMC Report #02-00. This report presents the assumptions, methodologies, and results of the analysis. Discussion of methodologies occurs in the Appendix.

Assumptions

Included in this analysis are two scenarios of alternative marketing loan rates. Specific assumptions have been developed through numerous consultations with staff of the requesting office. In the first scenario (Pomeroy #1), all marketing loan rates are increased from current levels, with relatively larger increases in food grains, feed grains, and cotton. In the second scenario (Pomeroy #2), loan rates for oilseeds are held fixed at current levels, while rates for other commodities are increased. In both scenarios, changes are assumed to begin with the 2001 crop and continue for the duration of the FAPRI baseline period, i.e. crop year 2009. Specific loan rates for the baseline and scenarios are given in Table 1.

Under Pomeroy #1, the loan rate for soybeans increases from \$5.26 per bushel up to \$5.72. According to recent data from USDA, this level equals the full economic costs of production of soybeans. At the request of Rep. Pomeroy, the loan rates for corn and wheat adjust to achieve ratios relative to soybeans of 2.26:1 and 1.62:1, respectively. This results in a loan rate for corn of \$2.53 per bushel, while wheat increases to \$3.53 per bushel. Loan rates for sorghum, barley and oats adjust to maintain current relationships with corn. Cotton and rice increase to \$0.62 per pound and \$8.50 per cwt., respectively, under Pomeroy #1.

Loan rates for oilseeds are held fixed at current levels under Pomeroy #2. Rates for corn and wheat adjust to maintain the same relationships as imposed in the previous scenario. For corn, this results in a rate of \$2.33 per bushel, while the loan rate for wheat increases to \$3.25. Again, loan rates for the minor grains are based on current relationships with corn. Under Pomeroy #2, the loan rate for upland cotton increases to \$0.58 per pound, while rice increases to \$7.50 per cwt.

Impacts of the scenarios are measured against the FAPRI January 2000 baseline projections. In the baseline, loan rates are fixed at current levels through the 2001 crop and adjust thereafter based on the formulas legislated under the FAIR Act. For oilseeds, the rates adjust to their statutory minimum beginning in 2002 and remain at that level for the duration of the baseline. Rates for feed grains and wheat also fall beginning in 2002, but stronger prices allow rates for those commodities to recover to the legislated maximums by the end of the baseline. Cotton follows a pattern similar to feed grains, with rice continuing at its legislated level of \$6.50 per cwt. for the duration of the baseline.

Table 1. Loan Rates Used in the Pomeroy Scenarios Compared to the FAPRI Baseline*

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Wheat									
	(Dollars per Bushel)								
Stochastic Baseline Avg	2.58	2.40	2.37	2.44	2.51	2.54	2.56	2.57	2.57
Pomeroy Scenario #1	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53
Pomeroy Scenario #2	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25
Corn									
Stochastic Baseline Avg	1.89	1.74	1.69	1.73	1.78	1.80	1.82	1.84	1.85
Pomeroy Scenario #1	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53
Pomeroy Scenario #2	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33
Soybeans									
Stochastic Baseline Avg	5.26	4.92	4.92	4.92	4.92	4.93	4.94	4.95	4.96
Pomeroy Scenario #1	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72
Pomeroy Scenario #2	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26
Cotton									
	(Dollars per Pound)								
Stochastic Baseline Avg	0.5192	0.5019	0.5032	0.5052	0.5071	0.5097	0.5121	0.5135	0.5153
Pomeroy Scenario #1	0.6200	0.6200	0.6200	0.6200	0.6200	0.6200	0.6200	0.6200	0.6200
Pomeroy Scenario #2	0.5800	0.5800	0.5800	0.5800	0.5800	0.5800	0.5800	0.5800	0.5800
Rice									
	(Dollars per Cwt)								
Stochastic Baseline Avg	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
Pomeroy Scenario #1	8.50	8.50	8.50	8.50	8.50	8.50	8.50	8.50	8.50
Pomeroy Scenario #2	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50
Sorghum									
	(Dollars per Bushel)								
Stochastic Baseline Avg	1.74	1.60	1.56	1.60	1.64	1.66	1.67	1.69	1.70
Pomeroy Scenario #1	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33
Pomeroy Scenario #2	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
Barley									
Stochastic Baseline Avg	1.59	1.46	1.43	1.46	1.50	1.52	1.53	1.54	1.56
Pomeroy Scenario #1	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13
Pomeroy Scenario #2	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96
Oats									
Stochastic Baseline Avg	1.13	1.04	1.01	1.04	1.07	1.08	1.09	1.10	1.11
Pomeroy Scenario #1	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51
Pomeroy Scenario #2	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39
Minor Oilseeds									
	(Dollars per Cwt)								
Stochastic Baseline Avg	9.30	8.71	8.70	8.70	8.71	8.74	8.79	8.83	8.91
Pomeroy Scenario #1	10.11	10.11	10.11	10.11	10.11	10.11	10.11	10.11	10.11
Pomeroy Scenario #2	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30

* Results represent the average values from 500 stochastic simulations.

Scenario Impacts

Tables 2-6 give a summary of the impacts of the alternative marketing loan rates relative to the FAPRI baseline projections. In all cases, the impacts represent a comparison of the average results from the 500 stochastic simulations. Further discussion on the performance of the policies at the market extremes will occur in a later section

Impacts on Key Aggregate Measures

Given projected prices in the FAPRI baseline, the loan rates in both Pomeroy scenarios bring additional acreage into production. In both cases, the Pomeroy loan rates set government support higher than under current law and guarantee that producer revenues will not fall below these levels if a producer makes a crop. Under Pomeroy #1, the scenario with the largest increases in loan rates, it is expected that total crop acreage would initially increase by 5 million acres above baseline levels, bringing total acreage up to levels similar to 1996 and 1997. Longer term, total plantings increase by approximately 3 million acres above the baseline. A smaller increase occurs under Pomeroy #2 given the smaller magnitude of the loan rate increase.

The increased loan rates lead to higher per-acre net returns for the major crops. As shown in Table 2, Pomeroy #1 generates eight-crop net returns above variable production costs that exceed baseline levels by an average of \$32 per acre. Pomeroy #2 gives net returns that average \$17 per acre above baseline levels.

The additional income does not come without a cost. With increased loan deficiency payments (LDPs) and marketing loan gains, net Commodity Credit Corporation (CCC) outlays increase by \$13 billion per year above baseline levels in the early years of the Pomeroy #1 scenario. By the end of the analysis period, outlays under Pomeroy #1 average \$10 billion above the baseline. For Pomeroy #2, the increase in outlays range between \$5 and \$8 billion above the baseline.

Increased marketing loan rates lead to higher U.S. net farm income. For the analysis period, farm income averages \$7.5 billion and \$4.2 billion above baseline levels for Pomeroy #1 and #2, respectively. The increased government costs do not translate into a one-for-one increase in net farm income due to a variety of factors. With additional crop production the decline in market prices more than offsets the increased production, thereby lowering total market receipts. In addition, a portion of the increased government outlays will be capitalized into additional input expenses.

Impacts on Crop Acreage

As loan rates for grains and cotton are increased relative to those of oilseeds, the overall crop mix will change from that found in the FAPRI baseline. As Table 3 depicts, area planted to soybeans and to other oilseeds is projected to fall from baseline levels in both scenarios as loan rates for grains and cotton increase relative to those for oilseeds. Subsequently, grain and cotton acreage increases from baseline levels. The impacts are more pronounced in the early years of the analysis due to the weak commodity prices projected in the FAPRI baseline.

Impacts on Crop Exports

As shown in Table 4, changes in exports under both scenarios generally reflect the movements in crop production. Exports of wheat, corn, cotton and rice are projected to increase above baseline levels, while soybean exports decline from the baseline.

Impacts on Crop Prices

It is important to note that the loan rates under the scenarios continue to be marketing loan rates, as under current legislation. Unlike traditional non-recourse loans, marketing loans do not isolate commodities from the market and do not provide a price floor. As a result, the impacts on market prices (Table 5) from the Pomeroy scenarios are driven by changes in acreage decisions brought about by the new loan rates. With increased production of grains and cotton, prices for those commodities decline from baseline levels. Under Pomeroy #1, wheat prices average \$0.16 per bushel below the baseline while corn averages \$0.13 per bushel below baseline levels. For soybeans, the price impact is just the opposite as lower plantings lead to marginally higher prices in the early years of the analysis. Longer term, oilseed price impacts are mixed due to competing crop prices and long-term adjustments.

Impacts on Livestock

Impacts on the livestock sector are given in Table 6. Lower grain prices signal the livestock sector to increase production levels above baseline levels, resulting in marginally lower prices for beef, pork and poultry. By the end of the analysis period, barrow and gilt prices average \$1 per cwt. below baseline levels.

Table 2. Impacts of Loan Rate Scenarios on Key Aggregates*

	2001	2002	2003	2004	2005	2006	2007	2008	2009
US Planted Area									
	(Million Acres)								
Stochastic Baseline Avg	257.3	257.6	257.7	258.5	258.7	259.2	259.8	260.3	261.1
Pomeroy Scenario #1	262.7	262.0	262.0	262.1	262.4	262.5	262.8	263.1	263.7
Change from Base	5.4	4.5	4.2	3.6	3.6	3.3	3.1	2.8	2.6
Pomeroy Scenario #2	260.3	259.7	259.8	260.0	260.4	260.6	261.0	261.4	262.0
Change from Base	3.1	2.1	2.0	1.5	1.6	1.4	1.3	1.1	1.0
Eight-Crop Net Returns									
	(Dollars per Acre)								
Stochastic Baseline Avg	97.29	94.04	99.28	102.41	107.64	112.16	116.27	120.61	125.27
Pomeroy Scenario #1	133.50	135.16	136.76	138.52	140.19	143.33	144.66	147.07	148.88
Change from Base	36.21	41.12	37.48	36.11	32.55	31.17	28.39	26.46	23.61
Pomeroy Scenario #2	116.15	118.40	120.09	122.61	124.91	128.13	130.48	133.67	137.08
Change from Base	18.86	24.36	20.81	20.20	17.26	15.97	14.21	13.07	11.81
Net CCC Outlays, FY									
	(Billion Dollars)								
Stochastic Baseline Avg	14.94	12.72	10.15	9.83	9.63	9.50	8.94	8.65	8.36
Pomeroy Scenario #1	17.38	24.15	23.44	22.86	22.33	21.49	20.49	19.52	18.61
Change from Base	2.44	11.43	13.29	13.03	12.69	11.99	11.55	10.87	10.25
Pomeroy Scenario #2	16.48	18.91	17.99	17.20	16.71	15.94	15.02	14.22	13.49
Change from Base	1.55	6.18	7.84	7.37	7.08	6.44	6.08	5.58	5.13
Net Farm Income, CaYr									
	(Billion Dollars)								
Stochastic Baseline Avg	40.05	40.15	40.94	40.51	40.25	41.17	42.47	43.42	44.69
Pomeroy Scenario #1	47.75	50.14	50.29	48.94	47.78	48.23	48.91	49.41	50.06
Change from Base	7.70	9.98	9.34	8.43	7.53	7.06	6.44	6.00	5.36
Pomeroy Scenario #2	44.28	46.23	46.44	45.30	44.33	44.89	45.79	46.44	47.41
Change from Base	4.22	6.08	5.49	4.79	4.09	3.72	3.33	3.03	2.72

* Results represent the average values from 500 stochastic simulations.

Table 3. Impacts of Loan Rate Scenarios on Crop Planted Area*

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Wheat Area									
	(Million Acres)								
Stochastic Baseline Avg	63.43	65.04	65.33	65.89	65.46	65.70	65.94	66.07	66.28
Pomeroy Scenario #1	66.89	66.67	66.59	66.65	66.39	66.33	66.43	66.44	66.67
Change from Base	3.46	1.63	1.26	0.76	0.92	0.63	0.49	0.37	0.39
Pomeroy Scenario #2	66.02	65.93	65.93	66.19	65.92	65.95	66.11	66.18	66.42
Change from Base	2.59	0.89	0.61	0.30	0.46	0.26	0.17	0.12	0.14
Corn Area									
Stochastic Baseline Avg	78.75	79.45	79.02	79.68	79.32	80.01	80.08	80.41	80.50
Pomeroy Scenario #1	80.87	81.04	80.89	80.98	80.85	81.19	81.32	81.54	81.58
Change from Base	2.13	1.59	1.86	1.30	1.53	1.19	1.25	1.13	1.08
Pomeroy Scenario #2	80.58	80.67	80.44	80.61	80.50	80.90	80.94	81.14	81.18
Change from Base	1.84	1.23	1.42	0.93	1.18	0.90	0.86	0.73	0.68
Soybean Area									
Stochastic Baseline Avg	72.62	71.55	72.24	71.97	73.04	72.72	73.12	73.24	73.73
Pomeroy Scenario #1	70.54	70.40	71.04	71.27	72.20	72.27	72.57	72.76	73.16
Change from Base	-2.08	-1.15	-1.20	-0.70	-0.84	-0.45	-0.55	-0.48	-0.57
Pomeroy Scenario #2	70.35	70.17	70.91	71.06	72.02	72.04	72.45	72.68	73.15
Change from Base	-2.26	-1.38	-1.33	-0.91	-1.02	-0.68	-0.67	-0.57	-0.58
Upland Cotton Area									
Stochastic Baseline Avg	14.26	14.01	13.88	13.81	13.82	13.75	13.75	13.79	13.80
Pomeroy Scenario #1	15.11	15.08	14.96	14.89	14.85	14.74	14.63	14.59	14.56
Change from Base	0.86	1.07	1.08	1.09	1.03	0.98	0.88	0.80	0.76
Pomeroy Scenario #2	14.64	14.56	14.43	14.36	14.31	14.20	14.11	14.09	14.07
Change from Base	0.38	0.55	0.55	0.55	0.49	0.45	0.36	0.30	0.27
Rice Area									
Stochastic Baseline Avg	3.48	3.51	3.43	3.41	3.39	3.38	3.35	3.34	3.32
Pomeroy Scenario #1	3.83	3.73	3.62	3.59	3.57	3.56	3.53	3.51	3.48
Change from Base	0.34	0.22	0.19	0.18	0.18	0.18	0.18	0.17	0.16
Pomeroy Scenario #2	3.65	3.60	3.51	3.49	3.47	3.46	3.42	3.41	3.38
Change from Base	0.17	0.09	0.07	0.08	0.08	0.08	0.07	0.07	0.06
Other Grain Area									
Stochastic Baseline Avg	19.46	18.81	18.64	18.58	18.51	18.47	18.32	18.23	18.18
Pomeroy Scenario #1	20.28	19.94	19.72	19.52	19.35	19.24	19.16	19.08	18.99
Change from Base	0.83	1.12	1.08	0.94	0.83	0.77	0.84	0.85	0.81
Pomeroy Scenario #2	19.97	19.59	19.35	19.12	18.98	18.86	18.77	18.67	18.56
Change from Base	0.51	0.78	0.72	0.54	0.46	0.39	0.45	0.43	0.38

* Results represent the average values from 500 stochastic simulations.

Table 4. Impacts of Loan Rate Scenarios on Crop Exports*

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Wheat Exports									
	(Million Bushels)								
Stochastic Baseline Avg	1,154	1,159	1,191	1,188	1,197	1,205	1,215	1,224	1,235
Pomeroy Scenario #1	1,197	1,198	1,218	1,207	1,214	1,222	1,227	1,234	1,238
Change from Base	43	39	28	19	17	17	12	9	4
Pomeroy Scenario #2	1,188	1,187	1,207	1,198	1,207	1,213	1,222	1,229	1,238
Change from Base	34	27	16	10	11	9	6	4	4
Corn Exports									
Stochastic Baseline Avg	2,072	2,130	2,213	2,266	2,322	2,385	2,454	2,533	2,609
Pomeroy Scenario #1	2,114	2,175	2,260	2,312	2,361	2,423	2,490	2,569	2,644
Change from Base	42	45	47	46	39	38	35	36	35
Pomeroy Scenario #2	2,113	2,175	2,263	2,312	2,366	2,425	2,492	2,567	2,641
Change from Base	41	45	50	46	45	41	37	34	32
Soybean Exports									
Stochastic Baseline Avg	1,040	1,027	1,016	1,029	1,044	1,059	1,064	1,076	1,082
Pomeroy Scenario #1	1,004	981	974	997	1,019	1,044	1,049	1,062	1,066
Change from Base	(36)	(46)	(42)	(32)	(25)	(15)	(15)	(14)	(17)
Pomeroy Scenario #2	1,001	976	969	992	1,012	1,034	1,043	1,057	1,064
Change from Base	(39)	(50)	(47)	(38)	(31)	(25)	(21)	(19)	(18)
Upland Cotton Exports									
	(Million Bales)								
Stochastic Baseline Avg	8.02	7.98	7.90	7.82	7.76	7.69	7.64	7.64	7.62
Pomeroy Scenario #1	8.44	8.65	8.72	8.68	8.64	8.55	8.44	8.40	8.35
Change from Base	0.42	0.68	0.82	0.86	0.87	0.86	0.80	0.76	0.72
Pomeroy Scenario #2	8.21	8.32	8.31	8.26	8.19	8.09	7.99	7.95	7.90
Change from Base	0.19	0.35	0.41	0.44	0.43	0.40	0.35	0.31	0.28
Rice Exports									
	(Million Cwt)								
Stochastic Baseline Avg	95.0	96.7	93.7	91.5	89.8	88.2	86.1	84.3	82.7
Pomeroy Scenario #1	107.0	109.5	105.3	102.0	100.1	98.6	96.4	94.5	92.3
Change from Base	12.0	12.8	11.6	10.5	10.4	10.5	10.3	10.2	9.7
Pomeroy Scenario #2	100.8	102.4	98.5	95.9	94.1	92.5	90.4	88.5	86.6
Change from Base	5.8	5.7	4.8	4.4	4.3	4.4	4.3	4.2	3.9

* Results represent the average values from 500 stochastic simulations.

Table 5. Impacts of Loan Rate Scenarios on Crop Prices*

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Wheat Farm Price									
	(Dollars per Bushel)								
Stochastic Baseline Avg	3.05	3.13	3.27	3.28	3.37	3.44	3.50	3.56	3.63
Pomeroy Scenario #1	2.89	2.96	3.09	3.10	3.19	3.28	3.35	3.42	3.48
Change from Base	-0.16	-0.17	-0.18	-0.17	-0.18	-0.16	-0.15	-0.15	-0.14
Pomeroy Scenario #2	2.93	3.03	3.17	3.18	3.27	3.35	3.42	3.49	3.56
Change from Base	-0.12	-0.11	-0.11	-0.10	-0.10	-0.09	-0.08	-0.07	-0.07
Corn Farm Price									
Stochastic Baseline Avg	2.15	2.18	2.26	2.27	2.34	2.37	2.42	2.45	2.50
Pomeroy Scenario #1	2.05	2.06	2.11	2.13	2.19	2.24	2.28	2.32	2.37
Change from Base	-0.09	-0.12	-0.15	-0.14	-0.15	-0.14	-0.14	-0.13	-0.13
Pomeroy Scenario #2	2.07	2.09	2.16	2.19	2.25	2.29	2.34	2.38	2.43
Change from Base	-0.07	-0.09	-0.10	-0.09	-0.09	-0.08	-0.08	-0.07	-0.07
Soybean Farm Price									
Stochastic Baseline Avg	4.57	4.92	4.95	5.13	5.15	5.35	5.46	5.63	5.76
Pomeroy Scenario #1	4.75	5.02	4.99	5.10	5.14	5.31	5.44	5.60	5.74
Change from Base	0.18	0.10	0.04	-0.03	-0.02	-0.04	-0.02	-0.03	-0.02
Pomeroy Scenario #2	4.77	5.05	5.04	5.16	5.19	5.36	5.47	5.64	5.78
Change from Base	0.20	0.13	0.08	0.03	0.04	0.02	0.02	0.01	0.02
Up. Cotton Farm Price									
	(Dollars per Pound)								
Stochastic Baseline Avg	0.484	0.504	0.525	0.544	0.562	0.579	0.596	0.611	0.628
Pomeroy Scenario #1	0.458	0.462	0.476	0.494	0.511	0.530	0.550	0.569	0.590
Change from Base	-0.026	-0.041	-0.048	-0.050	-0.050	-0.049	-0.045	-0.042	-0.038
Pomeroy Scenario #2	0.472	0.483	0.501	0.519	0.537	0.557	0.577	0.595	0.615
Change from Base	-0.012	-0.021	-0.024	-0.025	-0.025	-0.022	-0.019	-0.015	-0.013
Rice Farm Price									
	(Dollars per Cwt)								
Stochastic Baseline Avg	6.77	6.94	7.16	7.32	7.51	7.65	7.79	7.91	8.01
Pomeroy Scenario #1	5.83	6.01	6.37	6.59	6.76	6.88	7.02	7.14	7.27
Change from Base	-0.95	-0.93	-0.80	-0.73	-0.74	-0.77	-0.77	-0.78	-0.74
Pomeroy Scenario #2	6.30	6.53	6.84	7.01	7.20	7.33	7.47	7.59	7.71
Change from Base	-0.47	-0.41	-0.33	-0.31	-0.31	-0.32	-0.32	-0.32	-0.30

* Results represent the average values from 500 stochastic simulations.

Table 6. Impacts of Loan Rate Scenarios on U.S. Livestock*

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Beef Production									
	(Million Pounds)								
Stochastic Baseline Avg	25,001	24,751	25,026	25,506	26,062	26,727	27,266	27,470	27,516
Pomeroy Scenario #1	25,001	24,756	25,035	25,513	26,062	26,724	27,260	27,472	27,521
Change from Base	0	6	9	7	0	(3)	(6)	3	4
Pomeroy Scenario #2	25,001	24,755	25,035	25,511	26,064	26,727	27,267	27,472	27,521
Change from Base	0	4	8	5	2	(0)	1	3	5
Pork Production									
Stochastic Baseline Avg	18,444	18,586	19,046	19,487	19,858	19,827	19,954	20,435	20,863
Pomeroy Scenario #1	18,444	18,597	19,080	19,552	19,949	19,932	20,062	20,540	20,965
Change from Base	1	12	34	65	90	106	108	105	102
Pomeroy Scenario #2	18,444	18,593	19,070	19,530	19,917	19,892	20,019	20,495	20,919
Change from Base	0	8	24	44	59	65	65	61	56
Broiler Production									
Stochastic Baseline Avg	32,096	33,188	34,162	35,015	35,844	36,737	37,704	38,742	39,849
Pomeroy Scenario #1	32,099	33,210	34,220	35,114	35,969	36,871	37,830	38,862	39,968
Change from Base	2	22	59	100	125	133	126	120	119
Pomeroy Scenario #2	32,098	33,197	34,191	35,064	35,905	36,801	37,766	38,802	39,904
Change from Base	2	9	29	49	61	63	63	60	55
NE 11-1300# Steer Price									
	(Dollars per Cwt)								
Stochastic Baseline Avg	73.21	74.95	75.59	74.13	71.13	68.50	66.80	67.31	68.88
Pomeroy Scenario #1	73.21	74.85	75.35	73.75	70.73	68.04	66.40	66.88	68.49
Change from Base	-0.01	-0.10	-0.25	-0.38	-0.41	-0.47	-0.40	-0.43	-0.39
Pomeroy Scenario #2	73.21	74.89	75.43	73.90	70.87	68.24	66.55	67.07	68.66
Change from Base	-0.00	-0.06	-0.16	-0.23	-0.26	-0.27	-0.26	-0.24	-0.22
IA-So Mn B&G Price									
Stochastic Baseline Avg	42.03	43.05	42.31	40.18	38.44	41.89	45.11	42.86	39.87
Pomeroy Scenario #1	42.02	42.91	41.92	39.48	37.52	40.82	44.01	41.79	38.85
Change from Base	-0.01	-0.14	-0.38	-0.70	-0.91	-1.07	-1.09	-1.07	-1.02
Pomeroy Scenario #2	42.02	42.97	42.05	39.73	37.85	41.25	44.46	42.25	39.31
Change from Base	-0.01	-0.08	-0.25	-0.45	-0.58	-0.65	-0.65	-0.61	-0.56
12-City Broiler Price									
Stochastic Baseline Avg	57.53	57.08	56.55	56.12	55.90	55.97	56.09	56.10	56.12
Pomeroy Scenario #1	57.52	56.92	56.17	55.47	55.10	55.08	55.22	55.25	55.28
Change from Base	-0.01	-0.15	-0.38	-0.65	-0.80	-0.89	-0.87	-0.85	-0.84
Pomeroy Scenario #2	57.53	57.01	56.35	55.77	55.47	55.51	55.62	55.65	55.71
Change from Base	-0.01	-0.06	-0.20	-0.34	-0.43	-0.47	-0.47	-0.44	-0.41

* Results represent the average values from 500 stochastic simulations.

Assessing Variability

Up to this point, discussions of scenario impacts have focused on averages from the 500 simulations. However, in order to get a better understanding of the potential range of outcomes under each policy option, Figures 1-6 compare the resulting distributions for selected variables. Per-acre wheat net returns for 2002 and 2009 are depicted in Figures 1 and 2. The graphs suggest that maximum levels of returns are similar under each set of loan rates, but the downside protection is much different. The higher loan rates provide a better backstop for net returns, of course assuming that a crop is produced.

The resulting distributions on net farm income are given in Figures 3 and 4. In general, the distributions have a similar shape with approximately the same level of variability. However, the higher loan rates and additional government outlays shift the distributions to the right.

Figures 5 and 6 give the distributions for net CCC outlays in 2002 and 2009, respectively. In these cases, the alternative policies contribute to dramatically different distributions of potential outlays. The shape is determined by the relative relationships of loan rates and prevailing market prices. The distributions under baseline policies become quite skewed as the majority of price outcomes produce a relatively small amount of LDP's and marketing loan gains. As a result, the majority of outcomes for outlays occur in a range from \$6 to \$10 billion. With the higher loan rates of the Pomeroy scenarios, the potential maximum outlays increase dramatically as LDP's occur on a regular basis. At the same time, the variability of outlays is much greater. In other words, outlays do not tend to bunch up around a particular level as they do under the baseline.

Table 7 gives another way of assessing the potential variability in outcomes. Based on the likelihood of occurrence from the 500 simulations, the probabilities of net CCC outlays and net farm income exceeding selected levels have been calculated. Not surprisingly, Pomeroy #1 provides the highest probability of exceeding a selected spending level, but also the greatest chance of providing a certain level of income. For example, there is a 69% chance that net outlays would exceed \$20 billion in 2002 under Pomeroy #1. On the other hand, there is a 77% probability that Pomeroy #1 would provide net farm income in excess of \$45 billion.

Concluding Remarks

The analysis indicates that increasing the marketing loan rates to levels suggested under Pomeroy #1 would bring about an increase in total crop area, with gains in grains and cotton more than offsetting declines in oilseeds. It is estimated that the program would cost an additional \$10-13 billion per year above baseline levels. Returns to the crops sector, as well as total net farm income, would increase above baseline levels. Net farm income would average \$7.5 billion higher than the baseline projections. Based on the stochastic simulations, the potential for substantially higher outlays does exist. Another issue that must be considered is compliance with WTO commitments. With an Aggregate Measure of Support (AMS) of \$19.1 billion beginning in FY-2001, there is a reasonable chance that Pomeroy #1 would generate support in excess of that level.

Figure 1. Distribution of Avg Wheat Per-Acre Net Returns, 2002

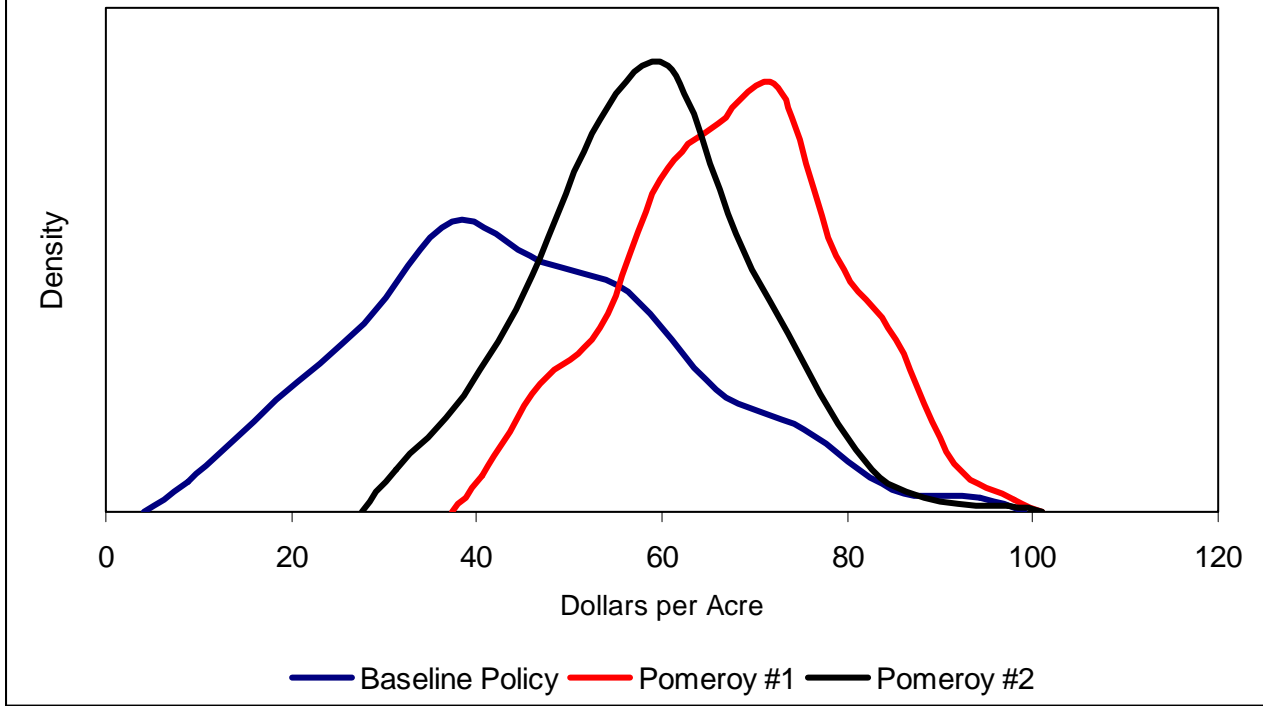


Figure 2. Distribution of Avg Wheat Per-Acre Net Returns, 2009

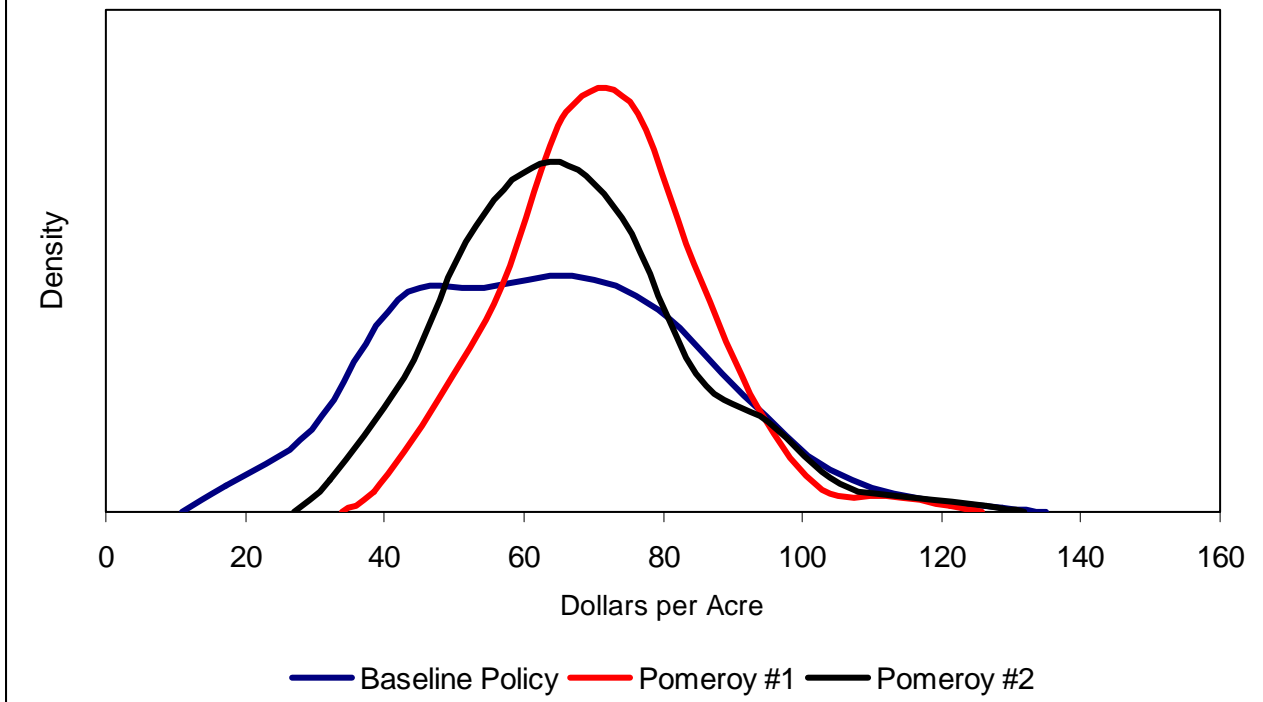


Figure 3. Distribution of US Net Farm Income, 2002

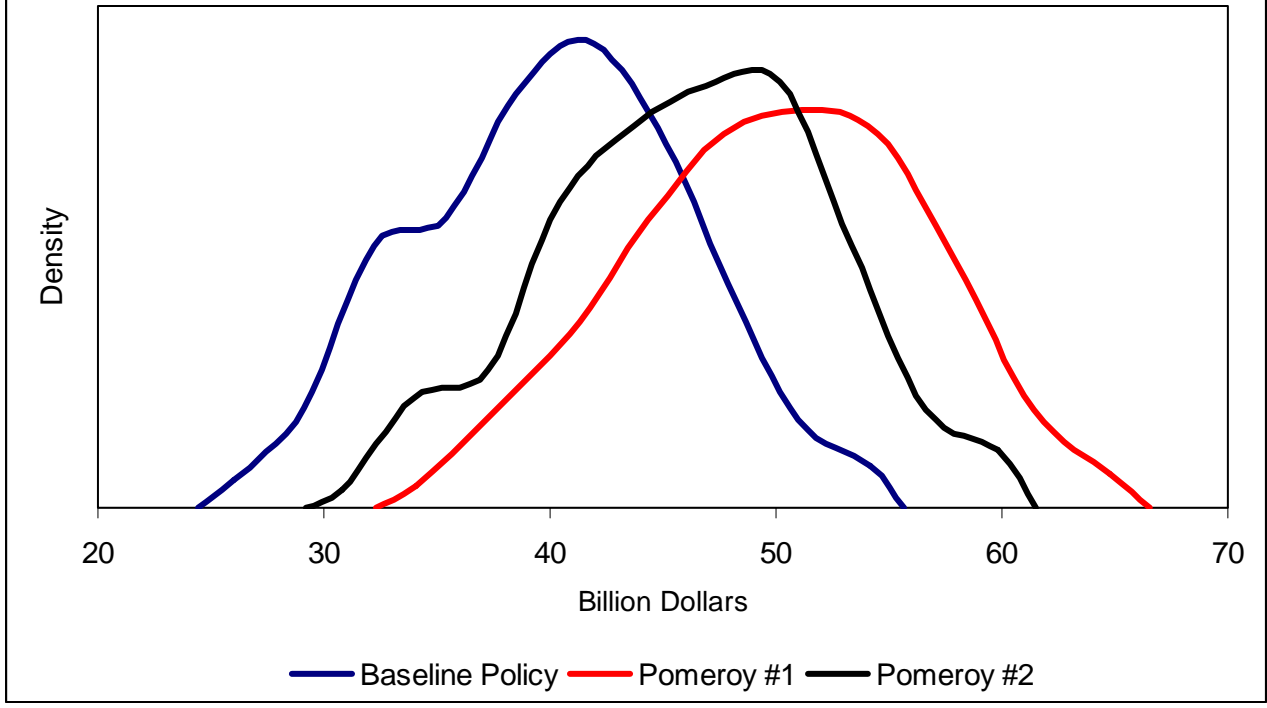


Figure 4. Distribution of US Net Farm Income, 2009

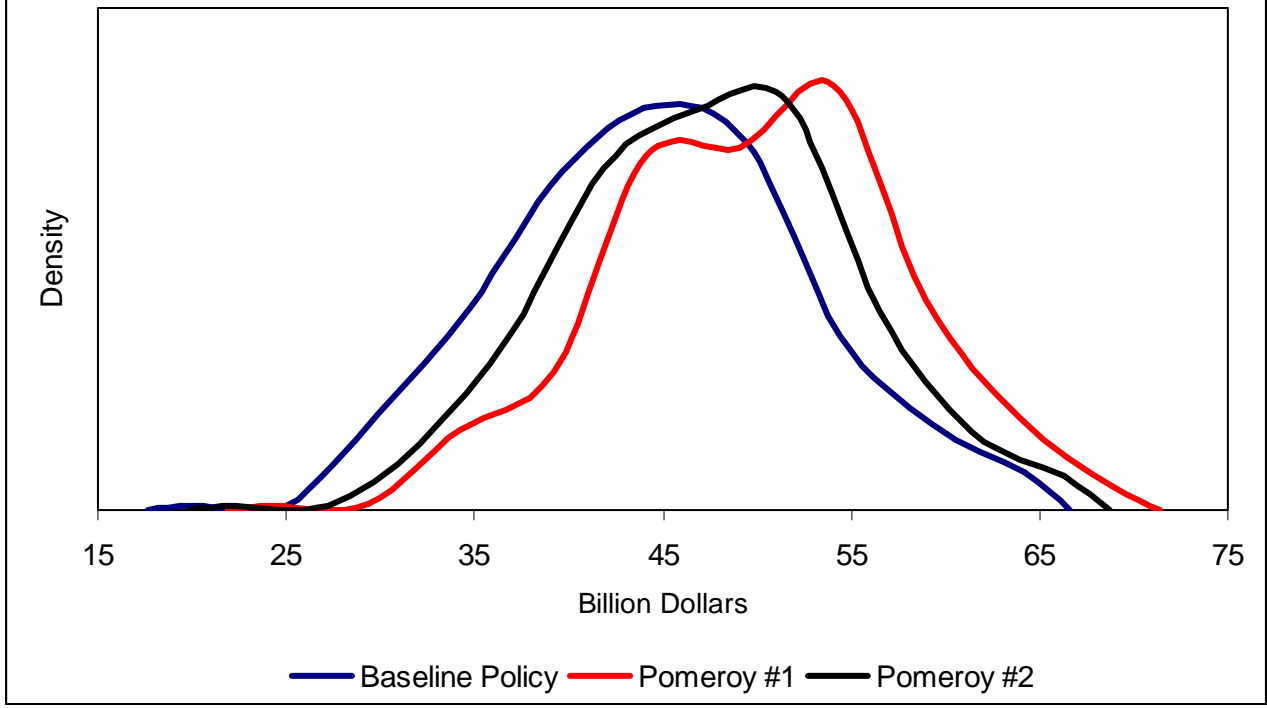


Figure 5. Distribution of Net CCC Outlays, 2002

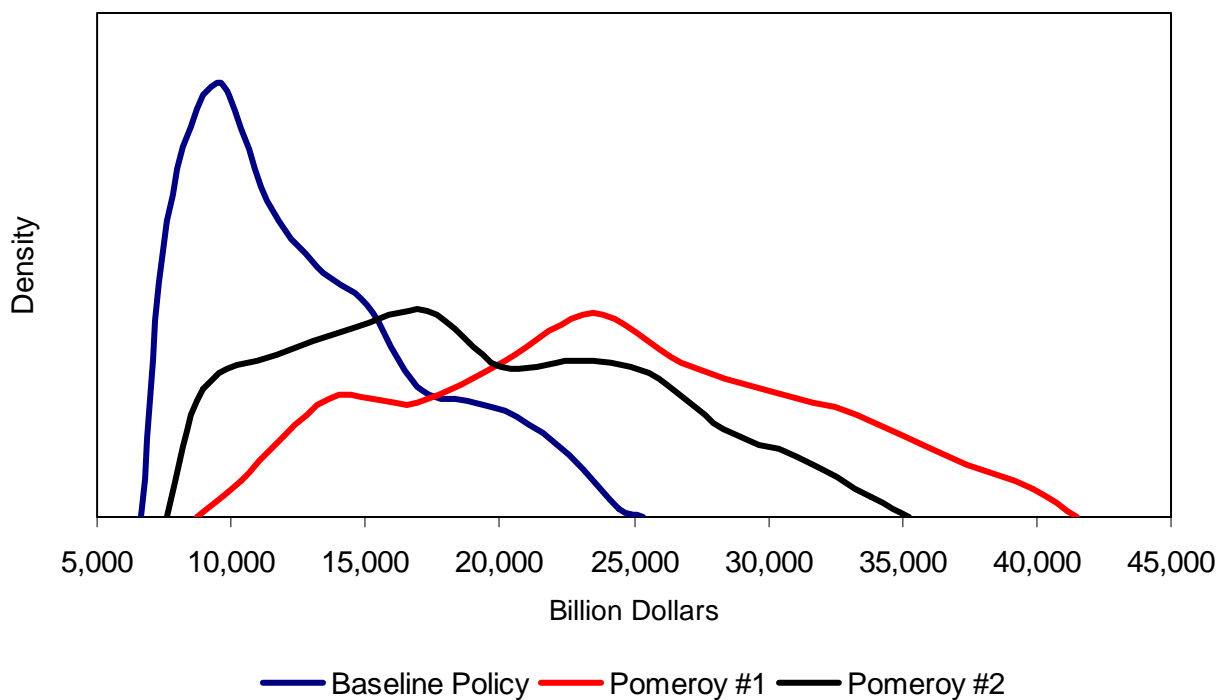


Figure 6. Distribution of Net CCC Outlays, 2009

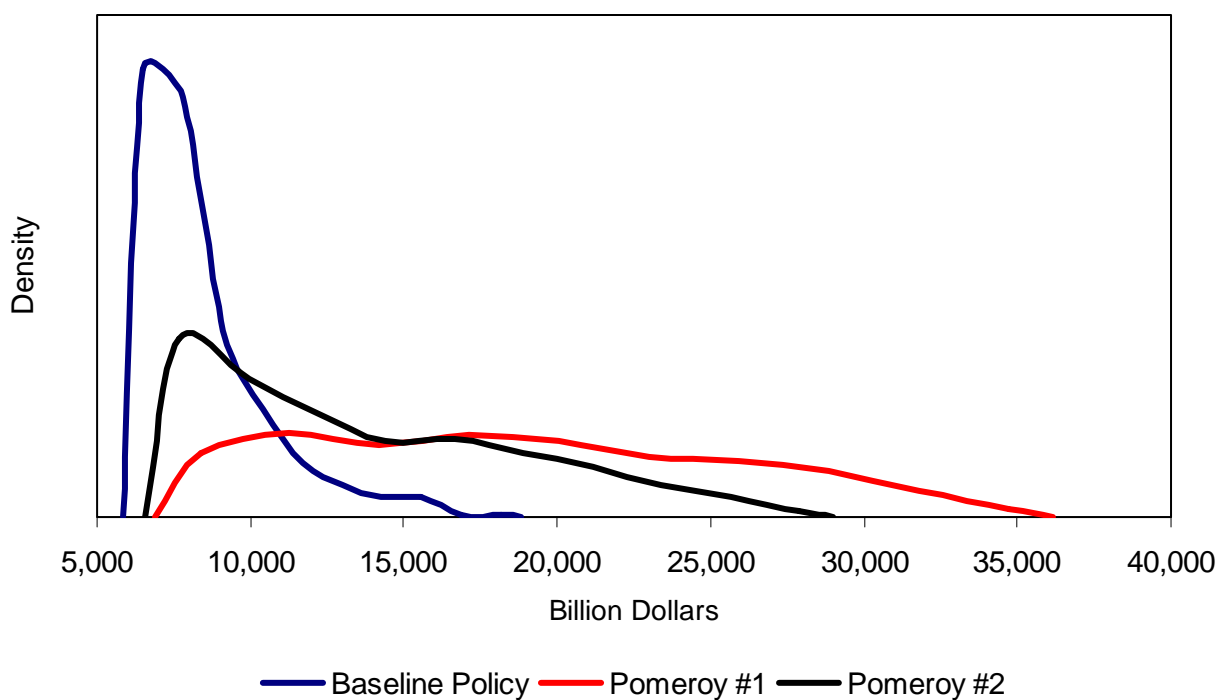


Table 7. Likelihood of Net CCC Outlays and Farm Income Exceeding Selected Levels*

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Probability of Net CCC Outlays > \$30 Bil									
Baseline Policies	0%	0%	0%	0%	0%	0%	0%	0%	0%
Pomeroy Scenario #1	0%	24%	19%	19%	17%	14%	10%	8%	6%
Pomeroy Scenario #2	0%	6%	3%	2%	3%	2%	1%	0%	0%
Probability of Net CCC Outlays > \$20 Bil									
Baseline Policies	14%	8%	0%	0%	0%	1%	0%	0%	0%
Pomeroy Scenario #1	28%	69%	67%	61%	59%	55%	51%	47%	41%
Pomeroy Scenario #2	23%	41%	38%	31%	29%	25%	23%	18%	14%
Probability of Net CCC Outlays > \$10 Bil									
Baseline Policies	88%	67%	42%	39%	31%	29%	25%	20%	16%
Pomeroy Scenario #1	98%	100%	98%	99%	96%	96%	94%	92%	88%
Pomeroy Scenario #2	96%	92%	91%	88%	85%	79%	75%	70%	64%
Probability of Net Farm Income > \$50 Bil									
Baseline Policies	1%	5%	8%	9%	8%	11%	16%	20%	24%
Pomeroy Scenario #1	39%	53%	55%	45%	42%	42%	46%	51%	53%
Pomeroy Scenario #2	16%	30%	30%	25%	20%	25%	27%	32%	39%
Probability of Net Farm Income > \$45 Bil									
Baseline Policies	17%	22%	25%	24%	26%	31%	36%	43%	47%
Pomeroy Scenario #1	68%	77%	79%	72%	67%	66%	70%	71%	73%
Pomeroy Scenario #2	47%	58%	62%	52%	48%	50%	55%	60%	62%
Probability of Net Farm Income > \$40 Bil									
Baseline Policies	52%	52%	57%	53%	53%	56%	63%	68%	72%
Pomeroy Scenario #1	87%	93%	91%	89%	84%	86%	86%	87%	90%
Pomeroy Scenario #2	76%	84%	83%	79%	73%	75%	78%	80%	82%

* Probability based on number of occurrences in 500 simulations.

Appendix – Methodology of the Analysis

The FAPRI baseline provides a deterministic view of the most plausible projection for U.S. agriculture based on the underlying assumptions. These assumptions include trend yields for crops, trend growth in macroeconomic indicators, and a continuation of current agricultural policies. The results are generally smooth paths for consumption, production, and prices with no indication of the potential variability around the projections.

However, analyzing alternative policies in a deterministic sense does not always give a complete picture of the potential impacts. This is particularly true of options such as changes in marketing loans, where the level of support and ultimately government outlays depends on both the production and price of the commodity. To better assess the impacts, the analysis must look across a range of potential production and price combinations. To generate ranges around not only production and price, but around all variables endogenous to the system, variability must be introduced for key assumptions and exogenous variables in the FAPRI modeling system.

The most obvious source of uncertainty and variability in agriculture is weather, both in the U.S. and abroad. To incorporate U.S. yield variability, distributions are estimated based on observed percentage deviations from trend over the 1969-98 period. For each year of the baseline, the estimated distributions, using the baseline yield as the mean, provide a basis for generating yield paths that are input into the modeling system. Draws from the yield distributions are correlated across crops using coefficients estimated from the historical percentage deviations. For example, the draws on corn and soybeans yields have a correlation coefficient of 0.785. Also, since these distributions are based on percent deviations from trend, the absolute levels of departure from trend increase over time as baseline yields increase.

Developments in international weather are among several factors impacting U.S. commodity exports. Changes in policies and macroeconomic conditions also affect production and consumption in other countries, thus shifting net trade positions. FAPRI maintains models for the major countries and regions around the world structured to capture these different influences. Ideally, shocks to the variables that affect U.S. trade would be fed through the complete global system. However, this would be an extremely involved undertaking. As an alternative, equations have been developed that mimic the behavior of the FAPRI global model to changing commodity prices. As with yields, the error terms, or deviations, from these equations are used to develop distributions that determine the potential range of shocks to U.S. exports. The shocks represent factors other than price that impact U.S. exports. With both intra-temporal and inter-temporal correlations imposed, the multi-year draws for export deviations are derived from the distributions.

As the past few months have shown, prices of inputs, such as fuel and fertilizer, can be highly variable. In the FAPRI modeling system, these input prices drive production costs, which influence acreage decisions as well as total production expenses in the farm income accounts. The baseline projects these cost of production components for the major crops. Given the underlying macroeconomic assumptions, these projections generally increase in a smooth fashion based on general price inflation. History has shown here as well that year-to-year

fluctuations have been significant. As with yields and exports, historical deviations have been used to introduce variability around costs of production.

As with any model, the equations contain unexplained errors. The error terms provide additional sources of uncertainty around the deterministic projections. To incorporate these sources of variability, distributions around the error terms of selected equations have been developed and used to generate stochastic draws. These equations include ending stock equations for the major crops and slaughter weights, breeding inventories, and per-capita domestic consumption on the livestock side.

With the distributions and appropriate correlations in place for the identified sources of variability, 500 multi-year draws are made to generate the stochastic input data. Each draw of data serves as input into the FAPRI modeling system. Solving the system gives output for endogenous variables such as production, consumption and prices of the major crop and livestock commodities. In addition, estimates for farm income and government outlays are calculated for each of the 500 draws.

For the analysis, the multiple draws are initially passed through the FAPRI models with baseline policies imposed to determine how current policies would fair in this kind of stochastic analysis. Next, the same draws are passed through the models on which the alternative loan rates have been imposed.

It is important to note that the stochastic analysis is based on distributions for the selected exogenous variables. The distributions are derived from observed deviations during an historical period. It is the goal of this analysis to capture the major sources of variability and reflect their impacts on the endogenous variables in the system. By no means, however, have we captured all possible sources of variability. It should not be concluded that the extreme values achieved in this analysis necessarily reflect the absolute extremes that are possible in the future.

Preliminary Analysis of Increasing/Realigning Loan Rates

*Prepared at the Request
of Rep. Earl Pomeroy
April 7, 2000*

FAPRI

Scenario Assumptions

*Preliminary Analysis of
Increased Loan Rates*

-
- Loan rate for soybeans is set at \$5.72 per bushel. Determined based on 100% of USDA's full economic cost of production.
 - Corn loan rate adjusted to achieve relationship of 2.26:1 ratio of soybean and corn loan rates. Wheat adjusted based on 1.62:1 relationship.
 - Minor grains adjusted to maintain current relationship with corn.
 - Cotton and rice adjusted to be "equitable" with other crops.
 - Scenario is measured relative to FAPRI January 2000 baseline.

Loan Rate Assumptions

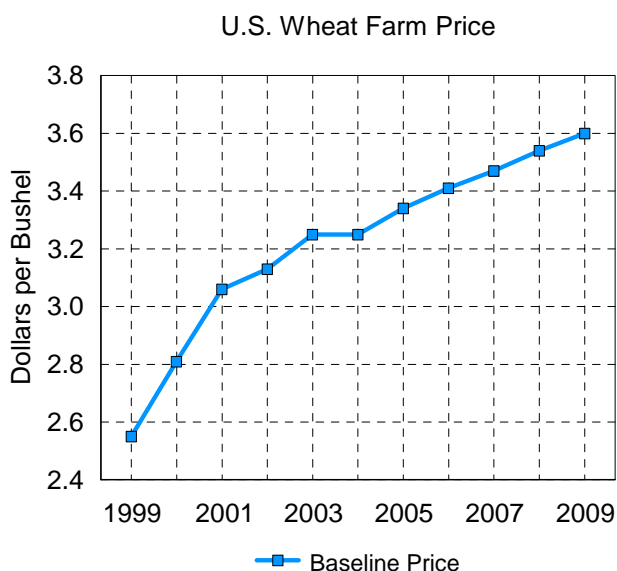
*Preliminary Analysis of
Increased Loan Rates*

	2001 Crop		2002 Crop		2005 Crop	
	Baseline	Scenario	Baseline	Scenario	Baseline	Scenario
Soybeans	5.26	5.72	4.92	5.72	4.92	5.72
Minor Oils	9.30	10.11	8.70	10.11	8.70	10.11
Corn	1.89	2.53	1.75	2.53	1.86	2.53
Wheat	2.58	3.53	2.41	3.53	2.58	3.53
Cotton	0.5192	0.620	0.500	0.620	0.500	0.620
Rice	6.50	8.50	6.50	8.50	6.50	8.50
Sorghum	1.74	2.33	1.61	2.33	1.71	2.33
Barley	1.59	2.13	1.47	2.13	1.56	2.13
Oats	1.13	1.51	1.05	1.51	1.11	1.51

Methodology of Analysis - Characteristics of the Baseline

*Preliminary Analysis of
Increased Loan Rates*

- The baseline assumes constant policies, trend yields, and trend growth in macro variables.
- As a result, price paths are generally smooth with little variability.



Methodology of Analysis - Introducing Variability

*Preliminary Analysis of
Increased Loan Rates*

- However, analyzing the scenario against a deterministic baseline does not provide a complete picture of the potential range of impacts.
- To capture this range, shocks were introduced into the FAPRI US modeling system for major exogenous variables and selected error terms. Shocks include the following:
 - US crop yields.
 - US crop exports.
 - Animal slaughter weights.
 - Adjustment factors on crop ending stock equations, livestock per-capita demand equations, and selected animal inventory equations.

Methodology of Analysis - Introducing Variability

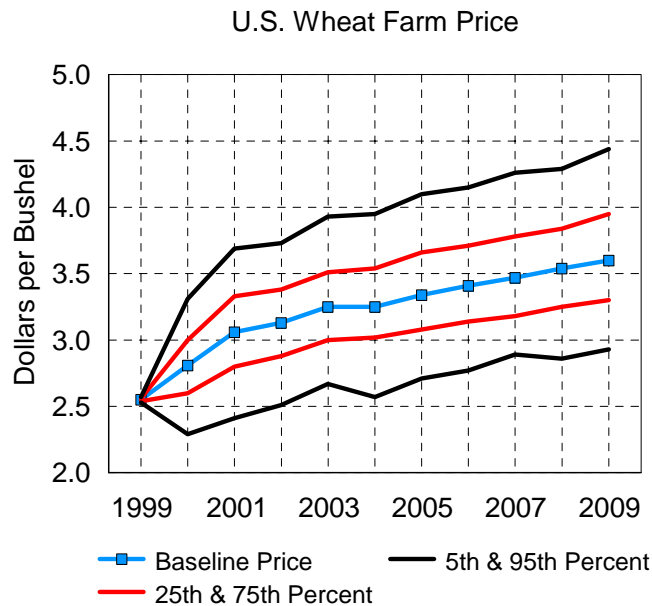
*Preliminary Analysis of
Increased Loan Rates*

- Distributions used are based on observed historical distributions. Stochastic draws are made with appropriate correlation.
- Each draw covers the 2000-2009 period.
- 500 such draws have been fed through the crops model, livestock model, a simplified dairy model and government costs. Farm income is currently being brought into the mix.

Methodology of Analysis - Developing Probability Ranges

*Preliminary Analysis of
Increased Loan Rates*

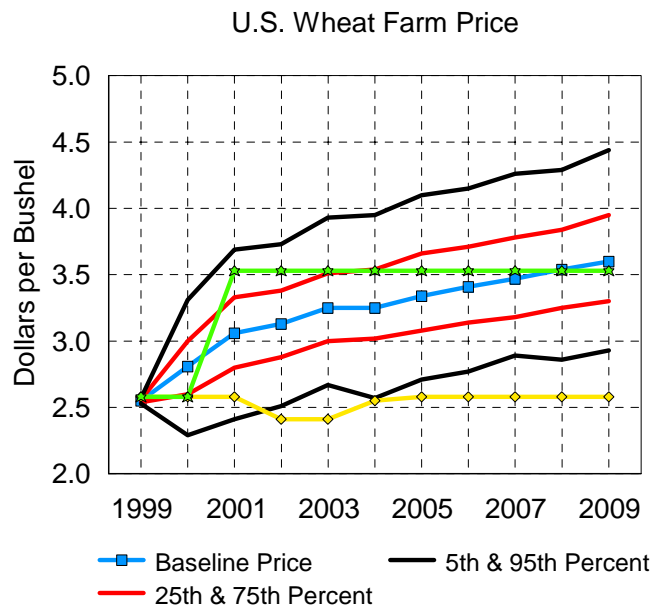
- The result will be variability around production, consumption and prices.
- We can develop probabilities ranges or the likelihood that price will be in a certain range.



Methodology of Analysis - Introducing Alternative Policies

*Preliminary Analysis of
Increased Loan Rates*

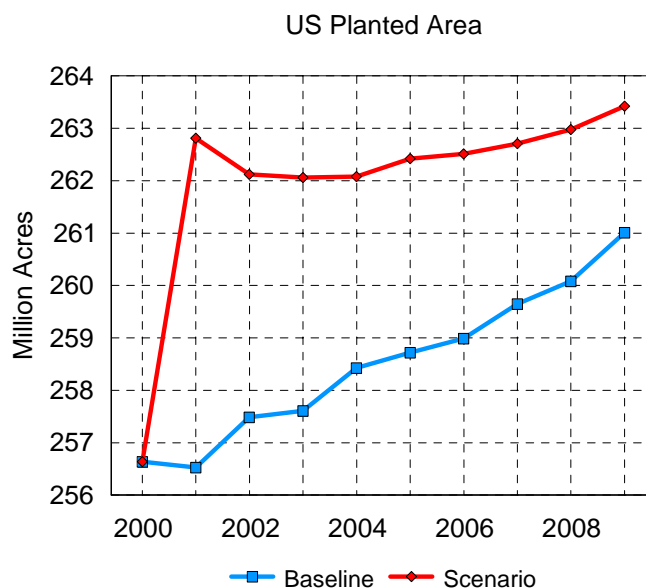
- The impacts of the alternative loan rates must be looked at over the possible range of prices and production.
- Approach is similar to the probabilistic scoring used by CBO.
- Yellow line is the baseline wheat loan rate. Green line is the proposed loan rate for the Pomeroy request.



US Planted Area, Grains, Oilseeds, Cotton

*Preliminary Analysis of
Increased Loan Rates*

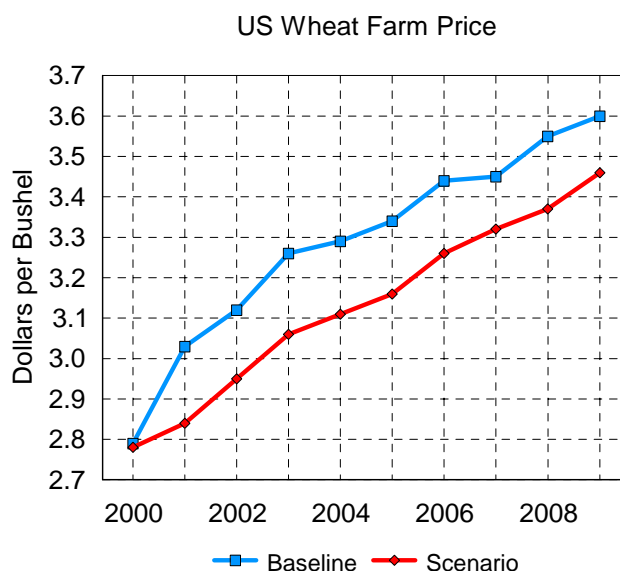
- Higher support levels would lead to an increase in overall plantings.
- Levels are comparable to those observed in 1995 and 1996.
- Relative to the baseline, grains and cotton would increase acreage at the expense of oilseeds.



Higher Acreage Leads to Lower Prices

*Preliminary Analysis of
Increased Loan Rates*

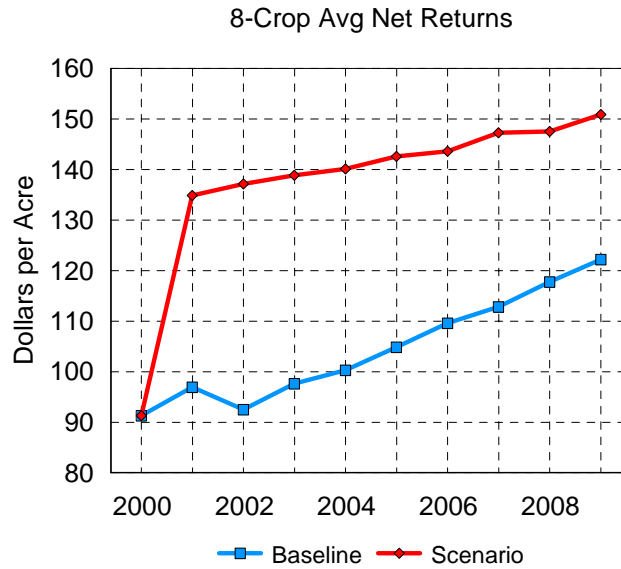
- As acreage levels increase, market prices are reduced.
- For wheat and corn, the decline in prices is about 10-15 cents from baseline levels.
- This will contribute to the cost of the program.



Higher Loan Rates Increase the Return to Producers

Preliminary Analysis of Increased Loan Rates

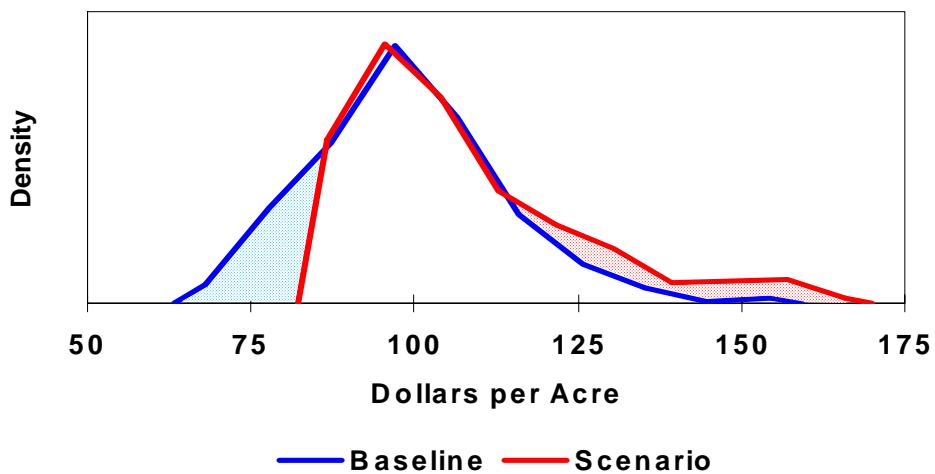
- For the 8 major crops, net returns above variable costs of production increase under the scenario.
- Depending on the year, the increase ranges between \$30 and \$50 per acre.



Higher Loan Rates Limit Downside Risk - If You Make a Crop

FAPRI

8-Crop Average Net Returns in 2003



Higher Loan Rates Mean Higher Gov't Outlays

Preliminary Analysis of Increased Loan Rates

- Higher loan rates lead to increased LDP's and marketing loan gains.
- Relative to the baseline, costs are estimated to increase by \$11-14 billion per year over the FY2002-09 period.

