Analysis of the Economic Viability for Representative Wheat Farms Given Alternative Farm Policies Proposed by the National Association of Wheat Growers

AFPC Briefing Paper 06-2

May 2006

Analysis of the Economic Viability for Representative Wheat Farms Given Alternative Farm Policies proposed by the National Association of Wheat Growers

James W. Richardson
J. Marc Raulston
George M. Knapek
Joe L. Outlaw
Agricultural and Food Policy Center
Texas A&M University
May 29, 2006

This report is a companion to FAPRI-UMC Report #09-06, which contains the sector level results of the wheat policy options requested by Senators Crapo and Baucus, and Representatives Musgrave and Pomeroy. The Agricultural and Food Policy Center (AFPC) has completed a farm level analysis of five alternative policy options on the economic viability of 13 representative wheat farms located across the United States. The results of the analysis are compared to a continuation of the current farm program over the 2006-2013 planning horizon, however, the policy alternatives are assumed to begin in 2008/09.

Methodology

The farm level analysis uses thirteen representative wheat farms developed by AFPC for analyzing farm programs. The representative farms are described in the Appendix in terms of their location (state and county), acres of cropland, acres planted to each crop, receipts for each crop, and assets. Data to describe the representative farms was obtained from interviewing panels of producers in major wheat production regions across the country (Figure 1). The farm panels are interviewed biannually to update data regarding crop production, program participation, crop insurance participation, asset value, and costs of production.

The representative farms are analyzed under risk using the Farm Level Income and Policy Simulation (FLIPSIM) model developed by AFPC. The model simulates representative crop farms under alternative farm programs and macro economic assumptions to project the economic viability of these farms over a ten year planning horizon. The results of the policy analyses are presented in terms of the probable impacts of alternative farm programs on key economic variables representing a farm's economic viability.

AFPC's farm level analyses use the probabilistic price projections from the Food and Agricultural Policy Research Institute (FAPRI). A complete FAPRI policy analysis consists of ten years of prices, yields, and policy variables (DP, CCP, and LDP rates) for 500 possible outcomes using different risks for each possible outcome. FAPRI's prices, yields, and policy values are used as input in the FLIPSIM model. National crop prices are localized using historical wedges between national and local prices for the crops.

Localized probabilistic crop prices are combined with risky crop yields to incorporate risk into the farm level analysis.

Policies Analyzed

In total, five alternative farm policies and the Base were analyzed over the 2006-2013 planning horizon[1]. The scenarios are summarized as follows:

- **Base** - represents a continuation of the current farm program for wheat with direct payment rate of $0.52, target price of $3.92, and loan rate of $2.75.
- **1A** - maintain current farm program, but increase direct payment rate to $1.00 and target price to $4.40.
- **1B** - same as 1A except that the marketing loan program is terminated.
- **1C** - maintain current farm program with direct payment rate of $0.52 and loan rate of $2.75, but increase target price to $5.00.
- **3A** - increase direct payment to $1.00, target price to $4.40, and the loan rate to $2.86; offer a flexible payment program: receive 100% of the highest of the DP, CCP, or LDP and 50% of the other two payments.
- **3B** - same as 3A but it is extended to all program crops with the producers eligible to receive 100% of the highest of the DP, CCP, or LDP and 50% of the other two payments.

Economic Variables Reported

The results of the farm level analysis are summarized in terms of five variables. The definitions of the variables are summarized as follows:

- **Change in Real Net Worth** - inflation adjusted change in net worth from January 1, 2006 to December 31, 2013. The variable shows the percentage change in net worth due to a farm policy change.
- **Average Gov't Payment for 2006-2013** - average annual total payment for direct payments, counter cyclical payments, and loan deficiency payments.
- **Average Net Cash Farm Income for 2006-2013** - average annual net cash income, which equals total market receipts and government payments minus all cash expenses. Net cash farm income is used to pay family living expenses, principal payments, income taxes, and social security/medicare taxes.
- **Average Cash Balance 2013** - nominal ending cash reserves for the farm December 31, 2013.
- **Net Present Value (NPV)** - sum of a farm's discounted income 2006-2013 plus the inflation adjusted change in the farm's net worth. This variable is useful for comparing the cumulative effects of one farm program to another over a multiple year planning horizon.

---

[1] Options **2A** and **2B** contained in the companion FAPRI report are being programmed and will be available in the near future.

Results

The results of analyzing the alternative policies for the representative wheat farms are reported in Table 1 as averages of key economic variables incorporating price and yield risk. Tables 2a-2m provide color coded rankings based on probabilities of negative ending cash and probabilities of decreasing real net worth for the farm under the base situation and each alternative.

The moderate size wheat farm in southeastern Washington (WAW1725) would see the highest average ending cash reserves in 2013 ($210,150) under the **1C** policy option, followed by the **1A** option (Table 1). The farm's average annual net cash farm income is also highest for the **1C** policy option with $108,140. The average net cash farm income ranges from $91,700 to $94,420 for policy options **1A, 1B** and **3A**, making it difficult to pick a clear second choice based on net cash farm income for this farm. The average annual government payments to the WAW1725 farm indicate why the **1C** option is the most preferred, averaging more than $80,000 per year while the other five options provide $45,990 to $66,120 per year. Higher government payments for the **1C** policy option lead to slightly higher increases in real net worth.

The results for all representative farms in this analysis agree with the moderate Washington wheat farm results, finding the **1C** policy option provides the highest average ending cash reserves and the largest average change in real net worth. Option **1A** is the second choice for all of the representative wheat farms analyzed, slightly edging out **1B**.

A risk ranking of the base and five policy alternatives is provided in Table 3. In this table, the effects of the policy options on both the level of income and the risk for income are considered in projecting the rankings. The analysis compared the probability distributions of NPV for the alternative policy options assuming farmers are normal risk averse decision makers who prefer more risk adjusted income to less. In other words, the ranking procedure factors in the effects of risk on farmer's incomes, as well as the average level of income, change in real net worth, and ending cash reserves. The overall ranking of the seven policy options shows option **1C** is preferred with the **1A** option ranked second (Table 3).

Policy options **1A** and **1B** were ranked second and third, respectively, by all farms. Loss of the marketing loan (**1B**) is ranked third by all of the representative farms, indicating that the marketing loan program offers a degree of income risk protection.

The lower level of support in the current farm program (**Base**), relative to the alternatives analyzed, causes it to be ranked fifth by most of the representative farms. The two flex payment options (**3A** and **3B**) were ranked fourth and sixth in the overall ranking. This indicates farmers would not prefer the option of 100% of the highest payment and 50% of the other two.

Summary

The farm level study of the policy options requested for analysis would likely meet mixed reaction by wheat producers. All wheat producers would prefer the increased direct payment and target price options over the current farm program, even if it called for a loss of the marketing loan program. Most would prefer to retain the marketing loan program because the option that eliminates it was ranked lower than the alternatives that keep it in place. The option providing flex payments for all crops (**3B**) was ranked lower than the other options, as it generally results in lower government payments than the current farm program.

Table 1. Comparison of Six Alternative Farm Programs on the Economic Viability of Thirteen Representative Wheat Farms, 2006-2013.

Representative Farms	Baseline Level (BASE)	Option 1: Adjustments to Current Program			Option 3: Flex Program	
		$1.00 Direct $4.40 Target $2.75 Loan (1A)	$1.00 Direct $4.40 Target No Loan (1B)	$0.52 Direct $5.00 Target $2.75 Loan (1C)	$1.00 Direct $4.40 Target $2.86 Loan (3A)	Budget Neutral All Crops (3B)
WAW1725						
Change in Real Net Worth (%)	1.43	2.90	2.81	3.83	2.72	1.38
Average Gov't Payment ($1,000)	46.45	66.12	64.75	80.36	63.53	45.99
Average Net Cash Farm Income ($1,000)	73.52	94.42	93.04	108.14	91.70	72.37
Average Cash Balance 2013 ($1,000)	30.43	140.49	133.34	210.15	126.18	23.54
WAW5000						
Change in Real Net Worth (%)	0.97	2.02	1.94	2.65	1.89	0.96
Average Gov't Payment ($1,000)	129.01	175.08	171.10	208.58	168.86	128.56
Average Net Cash Farm Income ($1,000)	162.79	214.68	210.30	248.34	207.69	160.23
Average Cash Balance 2013 ($1,000)	-619.81	-338.30	-362.22	-171.18	-376.04	-637.14
WAAW3500						
Change in Real Net Worth (%)	2.25	3.64	3.54	4.45	3.46	2.25
Average Gov't Payment ($1,000)	29.56	43.77	42.77	53.16	41.96	29.42
Average Net Cash Farm Income ($1,000)	68.82	84.87	83.78	94.59	82.81	68.21
Average Cash Balance 2013 ($1,000)	18.57	112.41	105.93	167.73	100.32	14.61
NDG2180						
Change in Real Net Worth (%)	0.92	2.42	2.35	3.73	2.20	1.05
Average Gov't Payment ($1,000)	46.53	55.56	55.24	63.64	54.33	47.37
Average Net Cash Farm Income ($1,000)	99.57	109.52	109.06	118.54	108.07	100.40
Average Cash Balance 2013 ($1,000)	-108.84	-49.79	-52.54	2.82	-58.47	-104.37
NDG7500						
Change in Real Net Worth (%)	5.69	6.24	6.22	6.66	6.17	5.74
Average Gov't Payment ($1,000)	182.85	221.29	220.50	251.82	216.45	184.30
Average Net Cash Farm Income ($1,000)	701.77	739.93	738.78	770.95	734.99	703.61
Average Cash Balance 2013 ($1,000)	1978.70	2152.52	2147.31	2291.89	2130.01	1987.09
KSCW1600						
Change in Real Net Worth (%)	-3.69	-1.93	-2.05	-0.88	-2.15	-3.74
Average Gov't Payment ($1,000)	30.59	42.01	41.25	49.52	40.57	30.00
Average Net Cash Farm Income ($1,000)	18.36	31.87	30.96	40.16	30.11	17.67
Average Cash Balance 2013 ($1,000)	-431.11	-335.29	-341.79	-278.64	-347.82	-436.54
KSCW4000						
Change in Real Net Worth (%)	-0.34	1.11	1.03	1.92	0.92	-0.43
Average Gov't Payment ($1,000)	70.43	96.64	95.34	113.80	93.42	69.40
Average Net Cash Farm Income ($1,000)	111.07	140.94	139.39	159.43	137.13	108.97
Average Cash Balance 2013 ($1,000)	-366.51	-185.39	-194.60	-83.43	-208.31	-382.31
KSNW2800						
Change in Real Net Worth (%)	-3.11	-1.91	-1.99	-1.19	-2.06	-3.19
Average Gov't Payment ($1,000)	41.85	52.77	51.95	59.94	51.38	41.03
Average Net Cash Farm Income ($1,000)	24.26	37.08	36.09	44.87	35.41	22.73
Average Cash Balance 2013 ($1,000)	-676.62	-580.65	-587.91	-523.33	-593.07	-688.40
KSNW5000						
Change in Real Net Worth (%)	-1.23	-0.05	-0.14	0.66	-0.20	-1.29
Average Gov't Payment ($1,000)	84.20	105.86	104.29	120.01	103.11	83.17
Average Net Cash Farm Income ($1,000)	81.48	106.24	104.35	121.50	103.01	79.27
Average Cash Balance 2013 ($1,000)	-754.26	-593.69	-605.68	-496.15	-614.69	-770.86
COW3000						
Change in Real Net Worth (%)	5.38	5.86	5.82	6.20	5.80	5.39
Average Gov't Payment ($1,000)	24.88	32.44	31.94	38.63	31.41	24.39
Average Net Cash Farm Income ($1,000)	142.90	150.37	149.88	156.22	149.37	142.28
Average Cash Balance 2013 ($1,000)	496.74	532.51	530.16	560.57	527.69	493.68
COW5640						
Change in Real Net Worth (%)	3.22	3.98	3.93	4.44	3.88	3.23
Average Gov't Payment ($1,000)	45.45	65.96	64.67	79.44	63.39	45.12
Average Net Cash Farm Income ($1,000)	174.96	196.72	195.38	210.21	194.01	174.19
Average Cash Balance 2013 ($1,000)	94.39	194.55	188.34	255.26	182.08	90.67
MTW4500						
Change in Real Net Worth (%)	3.44	4.31	4.26	4.81	4.22	3.48
Average Gov't Payment ($1,000)	57.59	80.56	79.12	95.71	77.93	58.10
Average Net Cash Farm Income ($1,000)	156.19	179.32	178.00	193.41	176.78	156.26
Average Cash Balance 2013 ($1,000)	390.52	505.60	498.53	570.91	492.64	389.87
ORW4000						
Change in Real Net Worth (%)	1.34	2.61	2.52	3.37	2.45	1.32
Average Gov't Payment ($1,000)	33.88	50.81	49.58	62.34	48.62	33.61
Average Net Cash Farm Income ($1,000)	105.66	123.86	122.61	135.15	121.53	104.90
Average Cash Balance 2013 ($1,000)	62.44	161.34	154.51	221.38	148.66	58.19

Change in Real Net Worth is the difference between beginning net worth on January 1, 2006 and ending net worth on December 31, 2013, discounted by the average annual change in the CPI.
Average Gov't Payments is the average annual government payments for direct payments, counter cyclical payments, and loan deficiency payments over 2006-2013.
Average Net Cash Income is the average of the net cash income earned by the farm over the 2006-2013 period; and equals total market receipts plus government payments minus all cash expenses.
Average cash balance 2013 is the average cash reserves at the end of the planning horizon on December 31, 2013.

Policies are abbreviated as follows:
Base represents continuation of the 2002 farm bill through 2013 with no changes in the levels of loan rates, direct payment rates, and target prices.
1A keeps current programs in place but increases direct payment rate to $1.00 from $0.52, target price to $4.40 from $3.92, and maintain loan rate at $2.75.
1B is the same as 1A except that the marketing loan rate is eliminated.
1C keeps the direct payment rate at $0.52, raises the target price to $5.00, and maintains the loan rate at $2.75.
3A is a flex program for wheat where producers get 100% of the highest wheat payment for DP, CCP, or LDP and 50% of the other two payments for wheat
3B is the same as 3A but it is extended to all program crops.

The representative farms are abbreviated as follows:
WAW1725 is a Southeastern Washington wheat farm with 1,725 acres of wheat, barley, and lentils.
WAW5000 is a Southeastern Washington wheat farm with 5,000 acres of wheat, barley, and lentils.
WAAW3500 is a South Central Washington wheat farm with 3,500 acres of wheat.
NDG2180 is an East Central North Dakota feedgrain and wheat farm with 2,180 acres of wheat, corn, and soybeans.
NDG7500 is an East Central North Dakota feedgrain and wheat farm with 7,500 acres of wheat, corn, soybeans, and dry beans.
KSCW1600 is a South Central Kansas wheat farm with 1,600 acres of wheat, grain sorghum, soybeans, and cotton.
KSCW4000 is a South Central Kansas wheat farm with 4,000 acres of wheat, grain sorghum, soybeans, and corn.
KSNW2800 is a Northwestern Kansas wheat farm with 2,800 acres of wheat, grain sorghum, and corn.
KSNW5000 is a Northwestern Kansas wheat farm with 5,000 acres of wheat, grain sorghum, corn, and soybeans.
COW3000 is a Northeastern Colorado wheat farm with 3,000 acres of wheat, millet, and corn.
COW5640 is a Northeastern Colorado wheat farm with 5,640 acres of wheat, millet, corn, and sunflowers.
MTW4500 is a North Central Montana wheat farm with 4,500 acres of wheat.
ORW4000 is a North Central Oregon wheat farm with 4,000 acres of wheat.

Table 2a. Ranking of Economic Viability for WAW1725 over the 2006-2013 Period Under the Base Situation and Five Policy Alternatives.

Scenario	P(Negative Ending Cash)	P(Real Net Worth Declines)
Overall Ranking	2006-2013	2006-2013
Base	56-37	1-14
1A	56-9	1-1
1B	56-10	1-2
1C	56-1	1-1
3A	56-12	1-2
3B	56-41	1-17

1 Viability is classified as good (green), moderate (yellow), and poor (red) based on the probabilities:

<25	25-50	>50

2 P(NegativeEnding Cash) is the probability that the farm will have a cash flow deficit. Reported values represent the probabilities for 2006 and 2013.

3 P(Real Net Worth Decline) is the probability that the farm will have a loss in real net worth relative to the beginning net worth. Reported values represent the probabilities for losing real net worth from 2004 to 2006 and from 2004 to 2013.

Table 2b. Ranking of Economic Viability for WAW5000 over the 2006-2013 Period Under the Base Situation and Five Policy Alternatives.

Scenario	P(Negative Ending Cash)	P(Real Net Worth Declines)
Overall Ranking	2006-2013	2006-2013
Base	63-96	1-20
1A	63-83	1-5
1B	63-84	1-7
1C	63-71	1-1
3A	63-84	1-8
3B	63-95	1-23

1 Viability is classified as good (green), moderate (yellow), and poor (red) based on the probabilities:

<25	25-50	>50

2 P(NegativeEnding Cash) is the probability that the farm will have a cash flow deficit. Reported values represent the probabilities for 2006 and 2013.

3 P(Real Net Worth Decline) is the probability that the farm will have a loss in real net worth relative to the beginning net worth. Reported values represent the probabilities for losing real net worth from 2004 to 2006 and from 2004 to 2013.

Table 2c. Ranking of Economic Viability for WAAW3500 over the 2006-2013 Period Under the Base Situation and Five Policy Alternatives.

Scenario	P(Negative Ending Cash)	P(Real Net Worth Declines)
Overall Ranking	2006-2013	2006-2013
Base	68-44	1-6
1A	68-11	1-1
1B	68-14	1-1
1C	68-2	1-1
3A	68-16	1-1
3B	68-45	1-7

1 Viability is classified as good (green), moderate (yellow), and poor (red) based on the probabilities:

<25	25-50	>50

2 P(NegativeEnding Cash) is the probability that the farm will have a cash flow deficit. Reported values represent the probabilities for 2006 and 2013.

3 P(Real Net Worth Decline) is the probability that the farm will have a loss in real net worth relative to the beginning net worth. Reported values represent the probabilities for losing real net worth from 2004 to 2006 and from 2004 to 2013.

Table 2d. Ranking of Economic Viability for NDG2180 over the 2006-2013 Period Under the Base Situation and Five Policy Alternatives.

Scenario	P(Negative Ending Cash)	P(Real Net Worth Declines)
Overall Ranking	2006-2013	2006-2013
Base	84-66	1-41
1A	84-57	1-30
1B	84-57	1-31
1C	84-49	1-22
3A	84-58	1-33
3B	84-64	1-41

1 Viability is classified as good (green), moderate (yellow), and poor (red) based on the probabilities:

<25	25-50	>50

2 P(NegativeEnding Cash) is the probability that the farm will have a cash flow deficit. Reported values represent the probabilities for 2006 and 2013.

3 P(Real Net Worth Decline) is the probability that the farm will have a loss in real net worth relative to the beginning net worth. Reported values represent the probabilities for losing real net worth from 2004 to 2006 and from 2004 to 2013.

Table 2e. Ranking of Economic Viability for NDG7500 over the 2006-2013 Period Under the Base Situation and Five Policy Alternatives.

Scenario	P(Negative Ending Cash)	P(Real Net Worth Declines)
Overall Ranking	2006-2013	2006-2013
Base	1-1	1-1
1A	1-1	1-1
1B	1-1	1-1
1C	1-1	1-1
3A	1-1	1-1
3B	1-1	1-1

1 Viability is classified as good (green), moderate (yellow), and poor (red) based on the probabilities:

<25	25-50	>50

2 P(NegativeEnding Cash) is the probability that the farm will have a cash flow deficit. Reported values represent the probabilities for 2006 and 2013.

3 P(Real Net Worth Decline) is the probability that the farm will have a loss in real net worth relative to the beginning net worth. Reported values represent the probabilities for losing real net worth from 2004 to 2006 and from 2004 to 2013.

Table 2f. Ranking of Economic Viability for KSCW1600 over the 2006-2013 Period Under the Base Situation and Five Policy Alternatives.

Scenario	P(Negative Ending Cash)	P(Real Net Worth Declines)
Overall Ranking	2006-2013	2006-2013
Base	99-99	1-90
1A	99-98	1-76
1B	99-98	1-78
1C	99-98	1-63
3A	99-98	1-79
3B	99-99	1-89

1 Viability is classified as good (green), moderate (yellow), and poor (red) based on the probabilities:

<25	25-50	>50

2 P(NegativeEnding Cash) is the probability that the farm will have a cash flow deficit. Reported values represent the probabilities for 2006 and 2013.

3 P(Real Net Worth Decline) is the probability that the farm will have a loss in real net worth relative to the beginning net worth. Reported values represent the probabilities for losing real net worth from 2004 to 2006 and from 2004 to 2013.

Table 2g. Ranking of Economic Viability for KSCW4000 over the 2006-2013 Period Under the Base Situation and Five Policy Alternatives.

Scenario	P(Negative Ending Cash)	P(Real Net Worth Declines)
Overall Ranking	2006-2013	2006-2013
Base	81-94	1-55
1A	81-82	1-20
1B	81-82	1-23
1C	81-69	1-6
3A	81-83	1-27
3B	81-94	1-54

1 Viability is classified as good (green), moderate (yellow), and poor (red) based on the probabilities:

<25	25-50	>50

2 P(NegativeEnding Cash) is the probability that the farm will have a cash flow deficit. Reported values represent the probabilities for 2006 and 2013.

3 P(Real Net Worth Decline) is the probability that the farm will have a loss in real net worth relative to the beginning net worth. Reported values represent the probabilities for losing real net worth from 2004 to 2006 and from 2004 to 2013.

Table 2h. Ranking of Economic Viability for KSNW2800 over the 2006-2013 Period Under the Base Situation and Five Policy Alternatives.

Scenario	P(Negative Ending Cash)	P(Real Net Worth Declines)
Overall Ranking	2006-2013	2006-2013
Base	99-99	1-85
1A	99-99	1-74
1B	99-99	1-75
1C	99-99	1-67
3A	99-99	1-75
3B	99-99	1-86

1 Viability is classified as good (green), moderate (yellow), and poor (red) based on the probabilities:

<25	25-50	>50

2 P(NegativeEnding Cash) is the probability that the farm will have a cash flow deficit. Reported values represent the probabilities for 2006 and 2013.

3 P(Real Net Worth Decline) is the probability that the farm will have a loss in real net worth relative to the beginning net worth. Reported values represent the probabilities for losing real net worth from 2004 to 2006 and from 2004 to 2013.

Table 2i. Ranking of Economic Viability for KSNW5000 over the 2006-2013 Period Under the Base Situation and Five Policy Alternatives.

Scenario	P(Negative Ending Cash)	P(Real Net Worth Declines)
Overall Ranking	2006-2013	2006-2013
Base	95-94	1-60
1A	95-91	1-46
1B	95-91	1-47
1C	95-87	1-35
3A	95-91	1-48
3B	95-94	1-61

1 Viability is classified as good (green), moderate (yellow), and poor (red) based on the probabilities:

<25	25-50	>50

2 P(NegativeEnding Cash) is the probability that the farm will have a cash flow deficit. Reported values represent the probabilities for 2006 and 2013.

3 P(Real Net Worth Decline) is the probability that the farm will have a loss in real net worth relative to the beginning net worth. Reported values represent the probabilities for losing real net worth from 2004 to 2006 and from 2004 to 2013.

Table 2j. Ranking of Economic Viability for COW3000 over the 2006-2013 Period Under the Base Situation and Five Policy Alternatives.

Scenario	P(Negative Ending Cash)	P(Real Net Worth Declines)
Overall Ranking	2006-2013	2006-2013
Base	1-1	1-1
1A	1-1	1-1
1B	1-1	1-1
1C	1-1	1-1
3A	1-1	1-1
3B	1-1	1-1

1 Viability is classified as good (green), mode 1-1

<25	25-50	>50

2 P(NegativeEnding Cash) is the probability that the farm will have a cash flow deficit. Reported values represent the probabilities for 2006 and 2013.

3 P(Real Net Worth Decline) is the probability that the farm will have a loss in real net worth relative to the beginning net worth. Reported values represent the probabilities for losing real net worth from 2004 to 2006 and from 2004 to 2013.

Table 2k. Ranking of Economic Viability for COW5640 over the 2006-2013 Period Under the Base Situation and Five Policy Alternatives.

Scenario	P(Negative Ending Cash)	P(Real Net Worth Declines)
Overall Ranking	2006-2013	2006-2013
Base	3-26	1-1
1A	3-9	1-1
1B	3-10	1-1
1C	3-3	1-1
3A	3-12	1-1
3B	3-29	1-1

1 Viability is classified as good (green), moderate (yellow), and poor (red) based on the probabilities:

<25	25-50	>50

2 P(NegativeEnding Cash) is the probability that the farm will have a cash flow deficit. Reported values represent the probabilities for 2006 and 2013.

3 P(Real Net Worth Decline) is the probability that the farm will have a loss in real net worth relative to the beginning net worth. Reported values represent the probabilities for losing real net worth from 2004 to 2006 and from 2004 to 2013.

Table 2l. Ranking of Economic Viability for MTW4500 over the 2006-2013 Period Under the Base Situation and Five Policy Alternatives.

Scenario	P(Negative Ending Cash)	P(Real Net Worth Declines)
Overall Ranking	2006-2013	2006-2013
Base	1-5	1-2
1A	1-2	1-1
1B	1-2	1-1
1C	1-1	1-1
3A	1-2	1-1
3B	1-5	1-2

1 Viability is classified as good (green), moderate (yellow), and poor (red) based on the probabilities:

<25	25-50	>50

2 P(NegativeEnding Cash) is the probability that the farm will have a cash flow deficit. Reported values represent the probabilities for 2006 and 2013.

3 P(Real Net Worth Decline) is the probability that the farm will have a loss in real net worth relative to the beginning net worth. Reported values represent the probabilities for losing real net worth from 2004 to 2006 and from 2004 to 2013.

Table 2m. Ranking of Economic Viability for ORW4000 over the 2006-2013 Period Under the Base Situation and Five Policy Alternatives.

Scenario	P(Negative Ending Cash)	P(Real Net Worth Declines)
Overall Ranking	2006-2013	2006-2013
Base	31-33	1-19
1A	31-11	1-4
1B	31-12	1-5
1C	31-4	1-1
3A	31-14	1-6
3B	31-33	1-19

1 Viability is classified as good (green), moderate (yellow), and poor (red) based on the probabilities:

<25	25-50	>50

2 P(NegativeEnding Cash) is the probability that the farm will have a cash flow deficit. Reported values represent the probabilities for 2006 and 2013.

3 P(Real Net Worth Decline) is the probability that the farm will have a loss in real net worth relative to the beginning net worth. Reported values represent the probabilities for losing real net worth from 2004 to 2006 and from 2004 to 2013.

Table 3. Ranking of Policy Alternatives for Thirteen Representative Wheat Farms, Based on Risk Analysis of Policies over 2008-2013 Planning Horizon.

Farm	Base	1A	1B	1C	3A	3B
WAW1725	5th	2nd	3rd	1st	4th	6th
WAW5000	5th	2nd	3rd	1st	4th	6th
WAAW3500	5th	2nd	3rd	1st	4th	6th
NDG2180	6th	2nd	3rd	1st	4th	5th
NDG7500	6th	2nd	3rd	1st	4th	5th
KSCW1600	5th	2nd	3rd	1st	4th	6th
KSCW4000	5th	2nd	3rd	1st	4th	6th
KSNW2800	5th	2nd	3rd	1st	4th	6th
KSNW5000	5th	2nd	3rd	1st	4th	6th
COW3000	5th	2nd	3rd	1st	4th	6th
COW5640	6th	2nd	3rd	1st	4th	5th
MTW4500	6th	2nd	3rd	1st	4th	5th
ORW4000	5th	2nd	3rd	1st	4th	6th
Overall Ranking	**5th**	**2nd**	**3rd**	**1st**	**4th**	**6th**

Policies are abbreviated as follows:

Base represents continuation of the 2002 farm bill through 2013 with no changes in the levels of loan rates, direct payment rates, and target prices.

1A keeps current programs in place but increases direct payment rate to $1.00 from $0.52, target price to $4.40 from $3.92, and maintain loan rate at $2.75.

1B is the same as 1A except that the marketing loan rate is eliminated.

1C keeps the direct payment rate at $0.52, raises the target price to $5.00 and maintains the loan rate at $2.75.

3A is a flex program for wheat where producers get 100% of the highest wheat payment for DP, CCP, or LDP and 50% of the other two payments.

3B is the same as 3A but it is extended to all program crops.

The representative farms are abbreviated as follows:

WAW1725 is a Southeastern Washington wheat farm with 1,725 acres of wheat, barley, and lentils.

WAW5000 is a Southeastern Washington wheat farm with 5,000 acres of wheat, barley, and lentils.

WAAW3500 is a South Central Washington wheat farm with 3,500 acres of wheat.

NDG2180 is an East Central North Dakota feedgrain and wheat farm with 2,180 acres of wheat, corn, and soybeans.

NDG7500 is an East Central North Dakota feedgrain and wheat farm with 7,500 acres of wheat, corn, soybeans, and dry beans.

KSCW1600 is a South Central Kansas wheat farm with 1,600 acres of wheat, grain sorghum, soybeans, and cotton.

KSCW4000 is a South Central Kansas wheat farm with 4,000 acres of wheat, grain sorghum, soybeans, and corn.

KSNW2800 is a Northwestern Kansas wheat farm with 2,800 acres of wheat, grain sorghum, and corn.

KSNW5000 is a Northwestern Kansas wheat farm with 5,000 acres of wheat, grain sorghum, corn, and soybeans.

COW3000 is a Northeastern Colorado wheat farm with 3,000 acres of wheat, millet, and corn.

COW5640 is a Northeastern Colorado wheat farm with 5,640 acres of wheat, millet, corn, and sunflowers.

MTW4500 is a North Central Montana wheat farm with 4,500 acres of wheat.

ORW4000 is a North Central Oregon wheat farm with 4,000 acres of wheat.

Appendix Table A1. Characteristics of Panel Farms Producing Wheat.

	WAW1725	WAW5000	WAAW3500	NDG2180	NDG7500	KSCW1600	KSCW4000
County	Whitman	Whitman	Adams	Barnes	Barnes	Sumner	Sumner
Total Cropland	1,725.00	5,000.00	3,500.00	2,180.00	7,500.00	1,600.00	4,000.00
Acres Owned	518.00	2,250.00	1,400.00	300.00	3,000.00	560.00	1,000.00
Acres Leased	1,207.00	2,750.00	2,100.00	1,880.00	4,500.00	1,040.00	3,000.00
Assets ($1000)							
Total	1,196.00	4,331.00	1,048.00	703.00	4,958.00	1,043.00	2,063.00
Real Estate	743.00	3,112.00	845.00	361.00	2,631.00	632.00	1,171.00
Machinery	420.00	1,164.00	198.00	334.00	1,833.00	397.00	892.00
Other & Livestock	33.00	55.00	5.00	8.00	495.00	14.00	0.00
Debt/Asset Ratios							
Total	0.18	0.16	0.15	0.25	0.13	0.28	0.20
Intermediate	0.21	0.19	0.08	0.17	0.10	0.30	0.23
Long Run	0.16	0.15	0.17	0.17	0.16	0.17	0.17
2005 Gross Receipts ($1,000)*							
Total	377.00	1,152.50	225.40	393.00	2,103.30	219.40	530.90
Wheat	306.80	858.40	209.70	75.90	258.80	131.70	220.00
	0.81	0.75	0.93	0.19	0.12	0.60	0.41
Sorghum	0.00	0.00	0.00	0.00	0.00	22.80	110.30
	0.00	0.00	0.00	0.00	0.00	0.10	0.21
Barley	30.00	58.10	1.00	2.00	6.90	0.00	0.00
	0.08	0.05	0.00	0.01	0.00	0.00	0.00
Corn	0.00	0.00	0.00	82.70	721.90	0.00	142.80
	0.00	0.00	0.00	0.21	0.34	0.00	0.27
Soybeans	0.00	0.00	0.00	231.60	993.30	19.70	57.80
	0.00	0.00	0.00	0.59	0.47	0.09	0.11
Dry Peas	40.20	216.90	0.00	0.00	105.40	0.00	0.00
	0.11	0.19	0.00	0.00	0.05	0.00	0.00
Sunflowers	0.00	0.00	0.00	0.80	8.20	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cotton	0.00	0.00	0.00	0.00	0.00	45.20	0.00
	0.00	0.00	0.00	0.00	0.00	0.21	0.00
Other Receipts	0.00	19.10	14.70	0.00	8.80	0.00	0.00
	0.00	0.02	0.07	0.00	0.00	0.00	0.00
2005 Planted Acres**							
Total	1,725.00	4,766.00	2,000.00	2,180.00	7,500.00	1,600.00	4,000.00
Wheat	1,121.00	2,915.00	1,500.00	480.00	1,200.00	1,072.00	2,000.00
	0.65	0.61	0.75	0.22	0.16	0.67	0.50
Sorghum	0.00	0.00	0.00	0.00	0.00	208.00	1,000.00
	0.00	0.00	0.00	0.00	0.00	0.13	0.25
Barley	173.00	233.00	0.00	0.00	0.00	0.00	0.00
	0.10	0.05	0.00	0.00	0.00	0.00	0.00
Corn	0.00	0.00	0.00	300.00	2,000.00	0.00	500.00
	0.00	0.00	0.00	0.14	0.27	0.00	0.13
Soybeans	0.00	0.00	0.00	1,300.00	3,750.00	160.00	500.00
	0.00	0.00	0.00	0.60	0.50	0.10	0.13
Dry Peas	431.00	1,293.00	0.00	0.00	300.00	0.00	0.00
	0.25	0.27	0.00	0.00	0.04	0.00	0.00
CRP	0.00	325.00	500.00	100.00	250.00	0.00	0.00
	0.00	0.07	0.25	0.05	0.03	0.00	0.00
Cotton	0.00	0.00	0.00	0.00	0.00	160.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.10	0.00

*Receipts for 2005 are included to indicate the relative importance of each enterprise to the farm. Percents
indicate the percentage of the total receipts accounted for by the livestock categories and the crops.

**Acreages for 2005 are included to indicate the relative importance of each enterprise to the farm. Total
planted acreage may exceed total cropland available due to double cropping. Percents indicate the percentage
of total planted acreage accounted for by the crop.

Appendix Table A2. Characteristics of Panel Farms Producing Wheat.

	KSNW2800	KSNW5000	COW3000	COW5640	MTW4500	ORW4000
County	Thomas	Thomas	Washington	Washington	Chouteau	Morrow
Total Cropland	2,800.00	5,000.00	3,000.00	5,640.00	4,500.00	3,600.00
Acres Owned	1,170.00	1,750.00	1,137.00	1,880.00	2,700.00	1,600.00
Acres Leased	1,630.00	3,250.00	1,863.00	3,760.00	1,800.00	2,000.00
Pastureland						
Acres Owned	400.00	500.00	200.00	0.00	0.00	0.00
Acres Leased	400.00	500.00	0.00	0.00	0.00	0.00
Assets ($1000)						
Total	1,444.00	2,419.00	1,295.00	2,141.00	2,148.00	1,174.00
Real Estate	999.00	1,700.00	877.00	1,384.00	1,620.00	739.00
Machinery	344.00	583.00	275.00	605.00	408.00	357.00
Other & Livestock	100.00	136.00	143.00	152.00	120.00	78.00
Debt/Asset Ratios						
Total	0.23	0.22	0.13	0.16	0.16	0.13
Intermediate	0.10	0.07	0.08	0.20	0.18	0.08
Long Run	0.17	0.16	0.16	0.15	0.17	0.16
Number of Livestock						
Beef Cows	80.00	100.00	0.00	0.00	0.00	0.00
2005 Gross Receipts ($1,000)*						
Total	352.70	786.30	262.80	499.20	326.30	289.30
Cattle	63.30	76.80	0.00	0.00	0.00	0.00
	0.18	0.10	0.00	0.00	0.00	0.00
Wheat	176.10	304.00	102.60	257.20	316.30	263.60
	0.50	0.39	0.39	0.52	0.97	0.91
Sorghum	38.20	60.90	0.00	0.00	0.00	0.00
	0.11	0.08	0.00	0.00	0.00	0.00
Barley	0.00	0.00	0.00	0.00	10.00	0.00
	0.00	0.00	0.00	0.00	0.03	0.00
Corn	75.10	302.10	78.80	78.40	0.00	0.00
	0.21	0.38	0.30	0.16	0.00	0.00
Soybeans	0.00	42.60	0.00	0.00	0.00	0.00
	0.00	0.05	0.00	0.00	0.00	0.00
Sunflowers	0.00	0.00	0.00	49.20	0.00	0.00
	0.00	0.00	0.00	0.10	0.00	0.00
Millet	0.00	0.00	63.40	98.70	0.00	0.00
	0.00	0.00	0.24	0.20	0.00	0.00
Other Receipts	0.00	0.00	18.00	15.70	0.00	25.60
	0.00	0.00	0.07	0.03	0.00	0.09
2005 Planted Acres**						
Total	2,100.00	3,850.00	2,475.00	4,340.00	2,475.00	2,000.00
Wheat	1,400.00	2,325.00	970.00	1,900.00	2,475.00	1,600.00
	0.67	0.60	0.39	0.44	1.00	0.80
Sorghum	233.00	382.00	0.00	0.00	0.00	0.00
	0.11	0.10	0.00	0.00	0.00	0.00
Corn	467.00	1,013.00	600.00	650.00	0.00	0.00
	0.22	0.26	0.24	0.15	0.00	0.00
Soybeans	0.00	130.00	0.00	0.00	0.00	0.00
	0.00	0.03	0.00	0.00	0.00	0.00
Sunflowers	0.00	0.00	0.00	260.00	0.00	0.00
	0.00	0.00	0.00	0.06	0.00	0.00
Millet	0.00	0.00	605.00	1,100.00	0.00	0.00
	0.00	0.00	0.24	0.25	0.00	0.00
CRP	0.00	0.00	300.00	430.00	0.00	400.00
	0.00	0.00	0.12	0.10	0.00	0.20

*Receipts for 2005 are included to indicate the relative importance of each enterprise to the farm. Percents
  indicate the percentage of the total receipts accounted for by the livestock categories and the crops.
**Acreages for 2005 are included to indicate the relative importance of each enterprise to the farm. Total
  planted acreage may exceed total cropland available due to double cropping. Percents indicate the percentage
  of total planted acreage accounted for by the crop.