



2007 Farm Bill: An Opportunity to Interface Tomorrow and Yesterday

**Carl Zulauf
Agricultural Economist
Ohio State University
August 2006**



Overview

- ❑ U.S. farm policy encompasses farm income support, conservation, credit, food assistance, the land grant mission, among other topics.**
- ❑ Many important issues exist in all areas, but the run-up to the next farm bill suggests farm income supports will be the center of attention.**



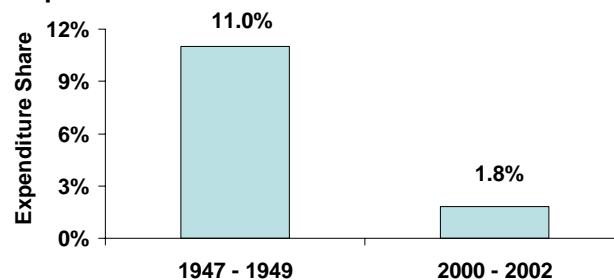
Historical Perspective

- ❑ When farm policy began (1930s), its primary objective was to manage price.
- ❑ The policy compromise was commonly-called the “ever-normal granary.” Key instruments were: ❶ minimum price floors, ❷ annual acreage controls, and ❸ public stocks.
- ❑ Producers benefited when prices were low as public stocks were acquired and land set aside.
- ❑ Consumers benefited when prices were high as public stocks were sold and land brought back into production.



Declining importance of farm prices to U.S. food consumers ...

Expenditures on U.S. Farm Products Used for Food

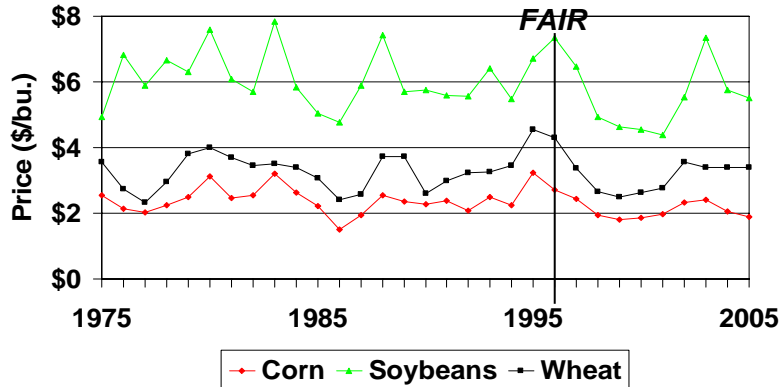


... underpinned elimination of price floors, most public stocks, and annual acreage set asides in 1985, 1991, and 1996 Farm Bills

Source: original calculations using data from U.S. Department of Agriculture and U.S. Department of Commerce.



U.S. Season Average Price ...

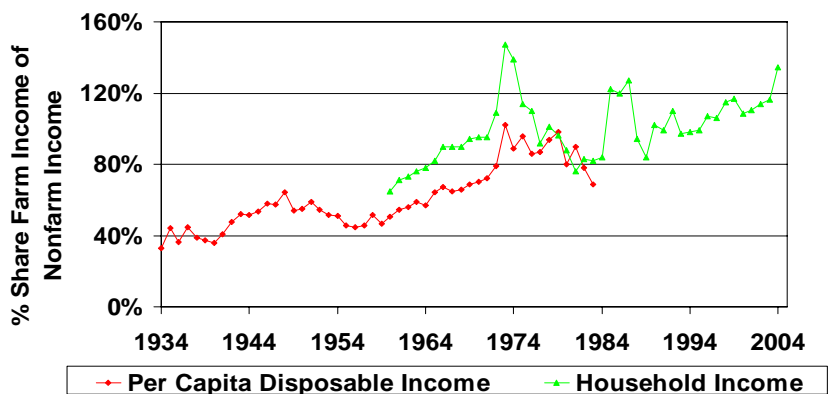


... has not shown any major trend since mid-1970s

Source: U.S. Department of Agriculture



U.S. Farm Income Relative to Non-Farm Income ...

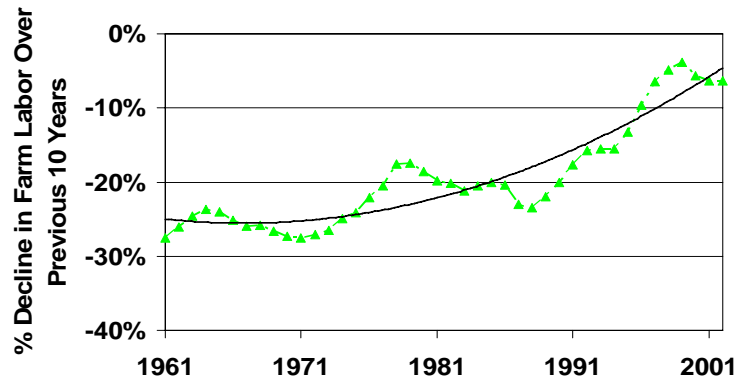


... has steadily increased since the Great Depression

Source: U.S. Department of Agriculture



Decline in Labor Used by U.S. Farms Over Previous 10 Years ...

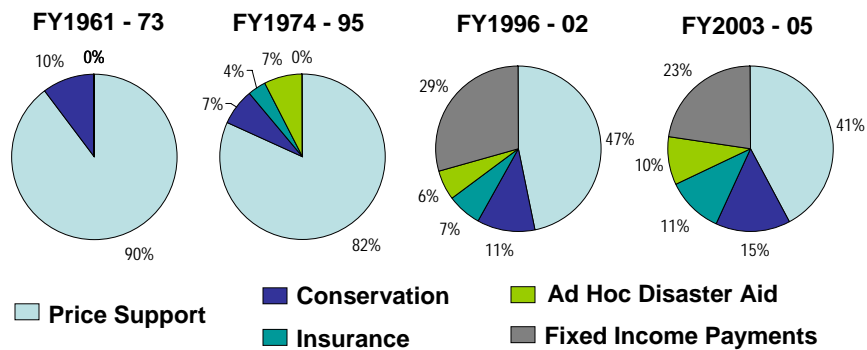


... has decreased dramatically over the last 20 years and is now well below 1% per year

Source: original calculations using data from U.S. Department of Agriculture



Spending on U.S. Farm Programs...



... has shifted from price support to risk management and fixed income payments

Source: Budgets of the U.S. Government, Fiscal Years 1962-2007



The Future of Farm Policy through the Past

- U.S. farm sector is approaching equilibrium.
- Current U.S. farm policy presumes surpluses and lower - than - equilibrium prices.
- In equilibrium, risk management is more important than support to prices/income.
- Growing share of farm program spending for risk management foreshadow this assertion.
- What would farm policy look like if it was designed to address farm risk?



A Farmer's Production Risk

- Until the planting decision is finalized, a farmer can adjust acres to reflect relative profitability
- After the planting decision is made, the farmer can make only limited adjustments.
- Thus, a farmer's unmanageable risk is that the revenue realized at harvest is less than the revenue expected at planting.
- Revenue can unexpectedly decline because (a) price declines due to unexpected declines in domestic and international demand and (b) production declines due to weather, etc.



Types of Risk

- Economics divides risk into 2 types: (1) market (systemic) risk; (2) individual (idiosyncratic) risk
- Private insurance can handle individual risk --- not everyone has a home fire at the same time
- Private insurance can not handle market risk --- if everyone has a home fire, private insurance firms go bankrupt
- Current crop insurance products, whether yield or revenue, do not distinguish between market and individual risk



National Revenue Deficiency Program For Market Risk

- U.S. Revenue Target per Acre: [*U.S. expected price at planting multiplied by U.S. expected average yield*]
- Realized U.S. Revenue per Acre: [*U.S. average price at harvest multiplied by U.S. average yield at harvest*]
- National Revenue Deficiency Payment: [U.S. Revenue Target – Realized U.S. Revenue]
- Note: target is reestablished each year.



U.S. Revenue Deficiency Program Example: Corn 2004

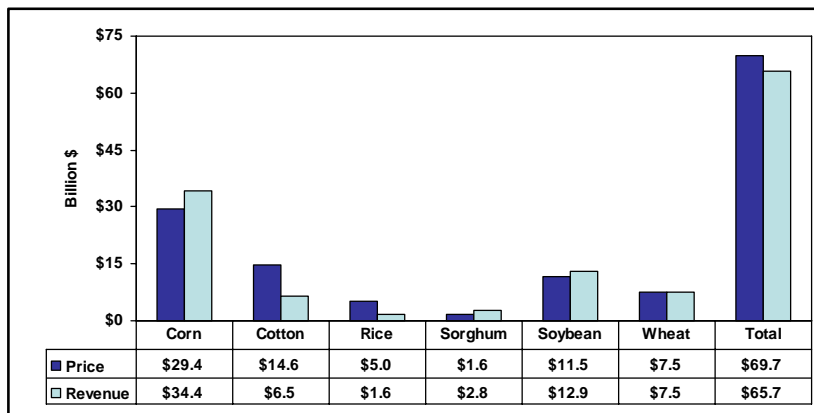
USDA Expected U.S. Yield: 145.0 bu./acre
February Insurance Price: \$2.83/bu.
Expected U.S. Revenue: \$410/acre

Realized U.S. Yield (October): 158.4 bu./acre
October Insurance Price: \$2.05/bu.
Realized U.S. Revenue: \$325/acre

Revenue Deficiency Payment: \$85/acre



Comparison: Actual Price Support Spending vs. Estimated Spending on U.S. Revenue Deficiency, 1996 - 2005



Source: Original Calculations by Carl Zulauf. Price support programs include marketing loan write offs, loan deficiency payments, market loss, certificates, and counter-cyclical payments.



Integrated Individual Farmer Revenue Insurance for Idiosyncratic Risk

- Farmer Revenue Target: [*U.S. expected price at planting multiplied by Farmer's expected average yield*]
- Realized Farmer Revenue: [*U.S. average price at harvest multiplied by Farmer's average yield at harvest*]
- Farmer Indemnity Payment: [Farmer's Revenue Target multiplied by Coverage Level] Minus Farmer's Realized Revenue
- Farmer Indemnity Payment is reduced by the farmer's national revenue deficiency payment



Integrated Individual Revenue Insurance Example: Corn 2004

Revenue Deficiency Payment \$85/acre

Farmer's Insurance Yield: 145.0 bu./acre
February Insurance Price: \$2.83/bu.
Expected Revenue: \$410/acre
Farmer's Coverage Level: 75%

	<u>Situation 1</u>	<u>Situation 2</u>
Farmer's Realized Yield:	120 bu.	100 bu.
October Insurance Price:	\$2.05/bu.	\$2.05/bu.
Realized Revenue:	\$246/acre	\$205/acre
Insurance Indemnity:	\$0/acre	\$17.50/acre

Calculation 1: $(\$410 * 0.75) - \$246 - \$85 = -\$23.5 (= \$0)$

Calculation 2: $(\$410 * 0.75) - \$205 - \$85 = \17.50



Integration Reduces Cost of Insurance at a Coverage Level

Crop	90% Revenue Insurance	90% Integrated Revenue Insurance	95% Revenue Insurance	95% Integrated Revenue Insurance
Corn	\$12.27	\$10.12	\$17.14	\$12.59
Cotton	\$18.86	\$16.76	\$25.22	\$20.10
Oats	\$6.68	\$3.85	\$8.86	\$4.44
Soybean	\$8.26	\$6.21	\$11.94	\$7.76
CBOT Winter Wheat	\$8.39	\$4.08	\$11.36	\$4.82
KCBOT Winter Wheat North	\$7.66	\$5.29	\$10.36	\$6.19
KCBOT Winter Wheat South	\$6.41	\$4.88	\$8.60	\$5.86

Source: Original Calculations by Carl Zulauf. Compares individual integrated insurance product with non-integrated product at the county level for the period 1972 through 1998.



Integrated Farm Revenue Program: Advantages

- Addresses revenue, not price, risk
- Provides protection when prices rise, not just when they fall --- important with equilibrium.
- Reduces trade distortions
- At no cost increase, coverage level of farmer insurance increase 5 to 10 percentage points
- Reduces holes in current risk policies
- Reduces cost of current programs
- Applicable to all crops and livestock



Integrated Farm Revenue Program: Disadvantages

- ❑ Commodities with above – market support will lose (cotton and rice)
- ❑ Farmers bear the risk of changes from year to year in prices/returns



Issue: Bio-Energy Adjustments

Acres to Meet 2012 U.S. Corn Ethanol Demand

Year	Ethanol bgpy	Corn to Ethanol	E(Yld) bu/ac	Other Use	Total Use	Acres Needed	Add'l to 05/06
2006	5.6	2.2	149.0	9.6	11.7	78.8	3.7
2007	6.7	2.6	152.5	9.7	12.3	80.5	5.4
2008	8.1	3.1	155.1	9.8	12.9	83.2	8.1
2009	8.9	3.4	157.7	9.9	13.3	84.4	9.3
2010	9.8	3.7	160.4	10.0	13.7	85.7	10.6
2011	10.8	4.1	163.1	10.1	14.2	87.2	12.1
2012	11.8	4.5	165.8	10.2	14.7	88.9	13.8

Source: Dr. Matthew Roberts, Ohio State Ag Economist, 7/2006



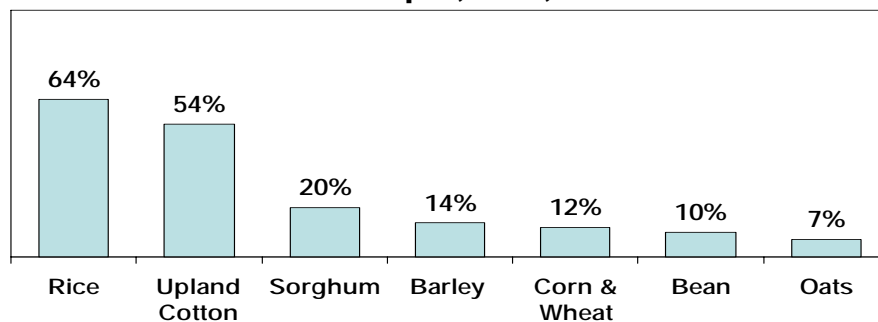
Issue: Bio-Energy Adjustments

- Who/what adjusts: acres, yields, conservation, livestock, exports, bioenergy?
- Is the ethanol subsidy (avoided federal excise tax) needed? The 5.6 billion gallons of ethanol forecast in 2006 translates into \$2.9 billion of foregone tax revenue to U.S. [\$0.51 per gallon] .
- WTO challenge of U.S. ethanol tariff?
- Is an ethanol bubble developing?



Issue: Differential Support Levels

Ratio of Spending on Price Support Programs to Cash Receipts, U.S., 2000-04



Source: Original Calculations by Carl Zulauf. Price support programs include marketing loan write offs, loan deficiency payments, market loss, certificates, and counter-cyclical payments.



Issue: Differential Support Levels

- U.S. farm policy can change only if the “southern concern” is addressed: reducing current level of support will financially devastate many cotton and rice (and sugar) farmers.
- EITHER, different programs are needed for Midwestern and Southern crops – precedents exist in the 1960s and 1985 Farm Bill
- OR, a partial buyout of current support levels of cotton and rice (and sugar) is needed.



Issue: Capitalization

- Farm support is capitalized into higher land values
- Disagreement exists on degree. Recent estimates for the U.S. suggest capitalization of 20% to 60%.
- Implication: *farm supports increase farm income by less than 100%*
- Implication: *farm program debates need to consider landlords. For example, a buyout of farm program benefits needs to be apportioned between landowners and farm operators.*



Summary

- **U.S. Farm Policy is in a state of transformation that begin with the 1985 Farm Bill**
- **Risk Management is likely to emerge as the key farm income policy issue**
- **Will the 2007/2008/later Farm Bill be a small or large step in this transformation? Stated alternatively, will it be an extension of the status quo or a major evolutionary step?**

Questions ?

Carl Zulauf
(614) 292-6285
Zulauf.1@osu.edu

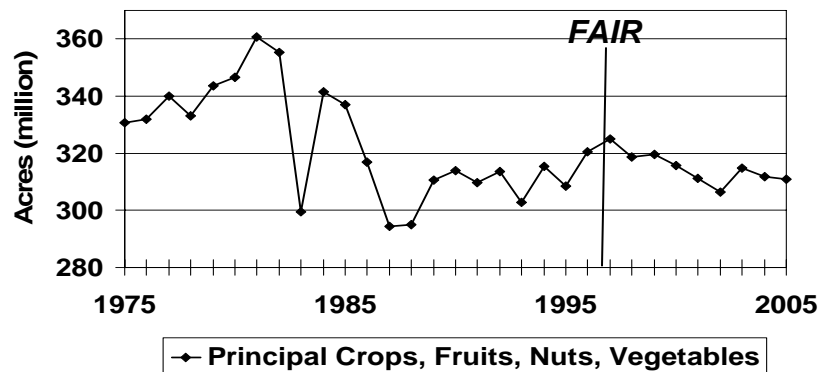


Federal Agriculture Improvement and Reform Act of 1996

- ❑ Eliminated annual acreage control programs and most public storage programs.
- ❑ How have acreage, price behavior, and stocks changed since *FAIR* was enacted.



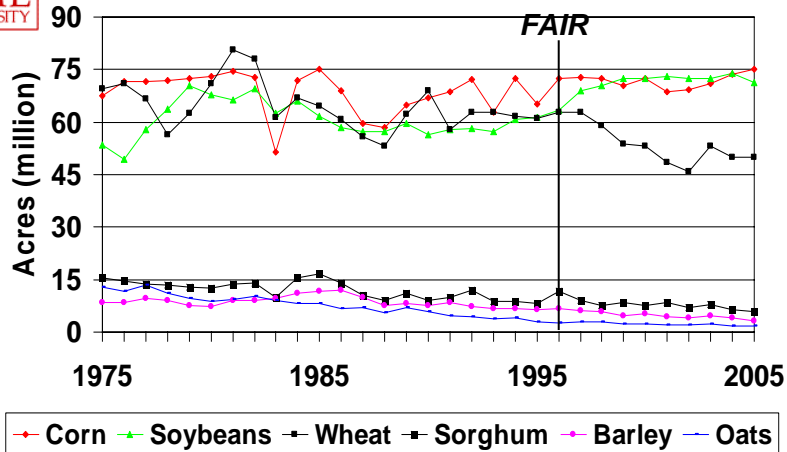
Total U.S. Harvested Acres ...



... have declined since the 1970s and not increased since *FAIR*



Harvested Acres ...



... have shifted from wheat, barley, oats, and sorghum to corn and soybeans since 1975



Since *FAIR*, Harvested Acres ...

<u>Crop</u>	<u>'91-95</u>	<u>'01-05</u>	<u>% Change</u>
	----- million -----		
Minor Oilseeds	3.1	3.9	+27%
Soybeans	59.2	72.7	+23%
Fruits	3.7	4.0	+10%
Rice	3.0	3.2	+7%
Hay	59.8	62.9	+5%
Corn	68.3	71.6	+5%
Vegetables	3.2	3.3	+2%
Upland Cotton	13.0	12.8	-2%
Wheat	61.2	49.5	-19%
Sorghum	9.6	7.2	-25%
Barley	7.1	4.1	-42%
Oats	4.0	2.0	-50%

... continue historical shift plus shift to non-grains



Since *FAIR*, U.S. Season Average Price ...

<u>Crop</u>	<u>'91-95</u>	<u>'01-05</u>	<u>% Change</u>
Cotton	\$0.63/lb.	\$0.45/lb.	-16%
Rice	\$7.48/cwt.	\$6.39/cwt.	-15%
Corn	\$2.49/bu.	\$2.13/bu.	-14%
Sorghum	\$2.35/bu.	\$2.03/bu.	-14%
Wheat	\$3.50/bu.	\$3.31/bu.	-5%
Soybean	\$5.95/bu.	\$5.70/bu.	-4%
Barley	\$2.21/bu.	\$2.54/bu.	+15%
Oats	\$1.36/bu.	\$1.59/bu.	+17%

... has tended to be in the lower range of the post 1975 price range



Since *FAIR*, Stocks – to – Use Ratio for All U.S. Grains

	<u>1974 – 1995</u>	<u>1997-2005</u>
Average	32%	19%
Standard Deviation	17%	4%

... has declined by 39% while annual variation in stocks of all U.S. grains has declined by 78%



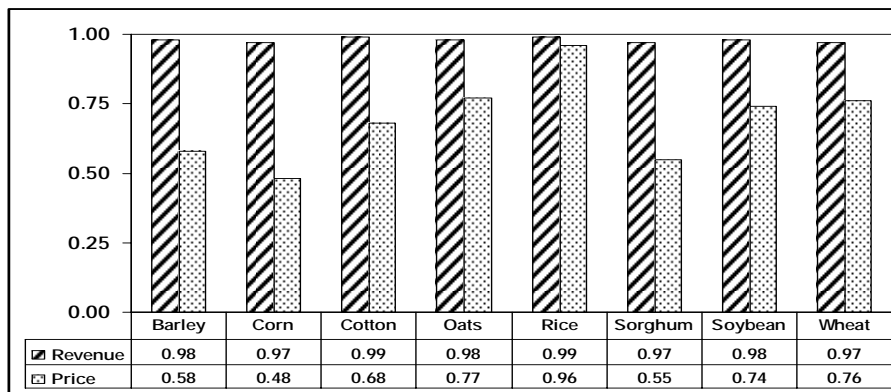
Since *FAIR* Standard Deviations of U.S. Season Average Price ...

<u>Crop</u>	<u>'74-95</u>	<u>'97-05</u>	<u>% Change</u>
Cotton (\$/lb.)	\$0.08	\$0.11	+40%
Soybean (\$/bu.)	\$0.83	\$0.98	+18%
Rice (\$/cwt.)	\$1.90	\$1.92	+1%
Barley (\$/bu.)	\$0.36	\$0.29	-20%
Oats (\$/bu.)	\$0.33	\$0.26	-21%
Wheat (\$/bu.)	\$0.57	\$0.43	-25%
Sorghum (\$/bu.)	\$0.41	\$0.30	-27%
Corn (\$/bu.)	\$0.42	\$0.25	-42%

... reveal no systematic increase in price variation and a decrease in price variation for grains



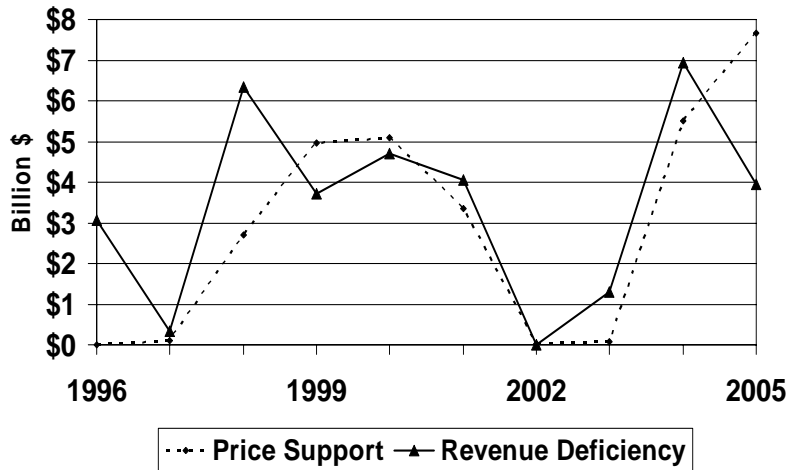
Annual Change in Per Acre U.S. Net Cash Income Is More Closely Correlated with Revenue (yield times price) than with Price



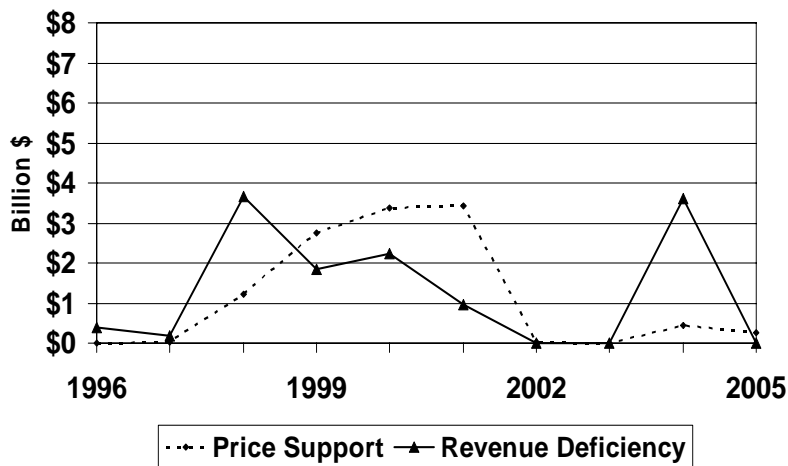
Data are from U.S. Department of Agriculture, Economic Research Service Cost of Production surveys from 1975 through 2004 [<http://www.ers.usda.gov/data/costsandreturns/testpick.htm>]. Because the methodology used to calculate cost of production changed substantially in the mid to late 1990s, the transition year was dropped from the analysis.



Comparison: Actual Price Support Spending vs. Estimated Spending on U.S. Revenue Deficiency, Corn

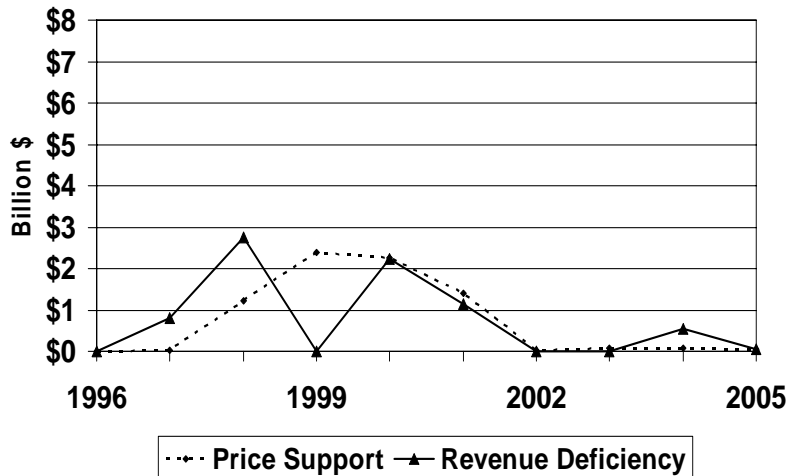


Comparison: Actual Price Support Spending vs. Estimated Spending on U.S. Revenue Deficiency, Soybean





Comparison: Actual Price Support Spending vs. Estimated Spending on U.S. Revenue Deficiency, Wheat



Issue: Fixed Payment Dilemma

- Policy involves society receiving something in return for transferring money.
- Does fixed payments of \$5.2 billion per year pass this criteria?
- They do not reduce risk since they are fixed.
- Are they needed to raise farm income if the farm sector is in equilibrium?
- Implication: fixed payments look vulnerable unless the societal benefit question is answered