2008 FARM BILL: FOCUS ON ACRE
(Average Crop Revenue Election)

Carl Zulauf
Ag. Economist, Ohio State University

Updated: October 3, 2008
ACRE includes a new state revenue guarantee program, authorized by *Food, Conservation, & Energy Act of 2008*
# Policy Innovations of ACRE’s State Revenue Protection Program

<table>
<thead>
<tr>
<th>ACRE targets revenue (state yield times U.S. price)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACRE’s revenue guarantee changes with state yield and U.S. price</td>
</tr>
<tr>
<td>Farm must have a revenue loss for a crop relative to farm’s ACRE benchmark revenue for the crop</td>
</tr>
<tr>
<td>ACRE partially coordinated with crop insurance [premium added to farm’s ACRE benchmark revenue for crop; ACRE state payment capped at 25% of state guarantee (most insurance is 75% coverage or less)]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Marketing Loan and Counter-Cyclical Programs target U.S. price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing loan rates and counter-cyclical target prices are fixed</td>
</tr>
<tr>
<td>Counter-cyclical and marketing loan payments made if farm has sizeable loss or record income</td>
</tr>
<tr>
<td>Counter-Cyclical and Marketing Loan programs not coordinated with crop insurance [can be disincentive to purchase insurance]</td>
</tr>
</tbody>
</table>
**Evolution of ACRE: Policy Process**

This slide focuses on the 2008 Farm Bill. Numerous proposals for a revenue farm support program have appeared over the years.

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**Integrated Farm Revenue Proposal (IFRP)**
- Carl Zulauf
- Basic concepts in *Ohio’s Country Journal*, p. 12, 12/2004
- Congressional Testimony, 9/21/2006

**County Revenue Counter-Cyclical Proposal**
- Bruce Babcock and Chad Hart
- Congressional Testimony, (9/21/2006)

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**American Farmland Trust**

**National Corn Growers Association**
- Public Policy Action Team Proposes a county revenue countercyclical program and farm-level base revenue protection program, 10/19/2006.

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**Average Crop Revenue (ACR) Program**
2. ACR included in Chairman Senator Tom Harkin’s mark of Senate’s farm bill.
3. Senate Committee on Agriculture, Nutrition, and Forestry adopts ACR with modifications (Senator Pat Roberts’ amendment).
4. ACR as amended remains in the Senate Farm Bill passed on 12/14/07.

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**Average Crop Revenue Election (ACRE) Program**

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October 6, 2008

Carl Zulauf, Ohio State University
## Evolution of ACRE: Comparison with Integrated Farm Revenue Policy Concepts

<table>
<thead>
<tr>
<th><strong>Policy Concept in Integrated Farm Revenue Proposal</strong></th>
<th><strong>Policy Concept in ACRE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenue</strong> instead of price support program</td>
<td><strong>Revenue</strong> instead of price support program</td>
</tr>
<tr>
<td><strong>Revenue target market oriented (not fixed)</strong></td>
<td><strong>Revenue target market oriented (not fixed)</strong></td>
</tr>
<tr>
<td>changes each year with product of</td>
<td>changes each year with product of</td>
</tr>
<tr>
<td>(a) harvest futures price and</td>
<td>(a) 2-year moving average of U.S. cash price and</td>
</tr>
<tr>
<td>(b) U.S. trend-line yield</td>
<td>(b) 5-year Olympic moving average of state yield</td>
</tr>
<tr>
<td><strong>Objective is to help farmers manage systemic revenue risk</strong></td>
<td><strong>Objective is to help farmers manage systemic revenue risk</strong></td>
</tr>
<tr>
<td>Specifically, planting-to-harvest declines in U.S. revenue associated with crop production</td>
<td>Specifically, short-term declines in state revenue associated with crop production</td>
</tr>
<tr>
<td><strong>Revenue support program integrated with crop insurance to remove systemic revenue risk from insurance products</strong></td>
<td><strong>Integration removed</strong> (Senator Roberts’ amendment), but <strong>elements of coordination with crop insurance</strong> included in ACRE</td>
</tr>
</tbody>
</table>
Beginning with 2009 Crop Year, Choice of

<table>
<thead>
<tr>
<th>(1) Traditional Suite of Programs</th>
<th>(2) ACRE Suite of Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing Loan</td>
<td>Marketing Loan at 70%</td>
</tr>
<tr>
<td>Direct Payment</td>
<td>Direct Payment at 80%</td>
</tr>
<tr>
<td>Price Counter-Cyclical</td>
<td>ACRE State Revenue Program</td>
</tr>
</tbody>
</table>

ACRE’s per acre state revenue guarantee for a crop

\[
\text{Revenue guarantee cannot change more than 10% from prior year.}
\]
CENTRAL QUESTION: Does ACRE’s state revenue guarantee program improve management of revenue risk enough compared to the price counter-cyclical program to compensate for a 20% reduction in direct payments and 30% reduction in marketing loan rates?

**Why ACRE State Revenue Improves Risk Management Relative to Counter-Cyclical**

- Revenue vs. Price
- Updated Price vs. Fixed Price
- Updated State Yield vs. U.S. Fixed Historical Yield
- Payment Based on Planted Acres (up to Farm’s Total Base Acres) vs. Historical Base Acres by Crop
20% of Average U.S. Direct Payment Per Base Acre

Direct payment reduction can be considered an ACRE risk management fee.

Calculation is made using data from the U.S. Department of Agriculture.

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## Comparison of Market and Policy Parameters

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Corn</td>
<td>86 million</td>
<td>88 million</td>
<td>150.8/acre</td>
<td>114.3/acre</td>
<td>$3.62/bushel</td>
<td>$2.35/bushel</td>
<td>$546/acre</td>
<td>$269/acre</td>
<td>$2.87/bushel</td>
</tr>
<tr>
<td>Soybeans</td>
<td>71 million</td>
<td>53 million</td>
<td>42.0/acre</td>
<td>34.1/acre</td>
<td>$8.29/bushel</td>
<td>$5.56/bushel</td>
<td>$348/acre</td>
<td>$190/acre</td>
<td>$5.13/bushel</td>
</tr>
<tr>
<td>Wheat</td>
<td>60 million</td>
<td>76 million</td>
<td>41.9/acre</td>
<td>36.1/acre</td>
<td>$5.37/bushel</td>
<td>$3.65/bushel</td>
<td>$225/acre</td>
<td>$132/acre</td>
<td>$4.21/bushel</td>
</tr>
</tbody>
</table>

**NOTES:** (1) An Olympic yield removes the highest and lowest value; ACRE’s yield calculation is over 5 most recent years. (2) Determination of which 2 years to average to calculate ACRE’s revenue guarantee is a subject of debate. I present the most conservative (lowest) price alternative. (3) Effective target price equals the target price minus the direct payment rate per bushel. (4) Revenue protection for ACRE equals [average cash price times average Olympic yield]. (5) Revenue protection for counter-cyclical program equals [counter-cyclical yield times effective target price].
Prices for U.S. Crop Production Inputs and Crops are Increasing ... Just as in 1970s

Increase between average for 1968-1972 and August 1974

- Crop Prices: 128%
- Input Prices: 57%

Increase between average for 2002-2006 and August 2008

- Crop Prices: 56%
- Input Prices: 50%

Notes: (1) Crop prices include all crops. (2) Crop production inputs include interest, taxes, and wages. (3) Source: U.S. Department of Agriculture, National Agricultural Statistics Service
ACRE Per Acre Revenue Payment Schematic

Is State’s Revenue Less Than State’s ACRE Revenue Guarantee?

Is Farm’s Revenue Less Than Farm’s ACRE Benchmark Revenue?

Both must be YES

Per Acre State Revenue Payment For Crop

83.3% [becomes 85% for 2012 crop] times smaller of [ACRE state revenue guarantee minus state actual revenue] or [25% of ACRE state revenue guarantee]

Adjustment to Farm Payment Rate

Per Acre Individual Farm Payment For Crop

State’s per acre payment rate times

Ratio: {[farm’s 5-year Olympic average yield (high and low yield removed)] divided by [state’s 5-Year Olympic average yield]}
Expenditures on Market Loss and Counter-Cyclical Programs vs. ACRE State Revenue Guarantee Program, 1996-2006 Crop Years
[ACRE payments calculated using moving averages with immediate past crop year.]

Sources: ACRE state revenue guarantee payments are original estimates. Payments for other programs are actual payments reported by the U.S. Department of Agriculture, Farm Service Agency (available at http://aede.osu.edu/resources/docs/display.php?cat=21)
Expenditures on Traditional Suite of Farm Programs vs. ACRE Suite of Farm Programs, 1996-2006 Crop Years

<table>
<thead>
<tr>
<th></th>
<th>Traditional Suite of Farm Programs</th>
<th>ACRE Suite of Farm Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn</td>
<td>$54.1</td>
<td>$25.9</td>
</tr>
<tr>
<td>Soybeans</td>
<td>$14.2</td>
<td>$8.6</td>
</tr>
<tr>
<td>Wheat</td>
<td>$21.9</td>
<td>$15.0</td>
</tr>
<tr>
<td>Total</td>
<td>$90.1</td>
<td>$49.6</td>
</tr>
</tbody>
</table>

(Billion $)

Notes: (1) Traditional suite of farm programs is direct payments, marketing loan, and price counter-cyclical program. (2) ACRE suite of farm programs is 80% of direct payments, marketing loan at 70% of the loan rate, and state revenue guarantee program. (3) Sources: ACRE state revenue guarantee payments are original estimates. Payments for other programs are actual payments reported by the U.S. Department of Agriculture, Farm Service Agency (available at [http://aede.osu.edu/resources/docs/display.php?cat=21](http://aede.osu.edu/resources/docs/display.php?cat=21))
Expenditures on Marketing Loan, Market Loss/Counter-Cyclical, and ACRE State Revenue Programs by Crop Year, Corn, 1996-2006

Sources: ACRE state revenue guarantee payments are original estimates. Payments for other programs are actual payments reported by the U.S. Department of Agriculture, Farm Service Agency (available at http://aede.osu.edu/resources/docs/display.php?cat=21)
Breakeven Price Between ACRE and Traditional Suites of Farm Programs, Average for 26 States
Includes direct, marketing loan, price counter-cyclical, and ACRE revenue payments

<table>
<thead>
<tr>
<th>Crop</th>
<th>Breakeven Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn</td>
<td>$2.87</td>
</tr>
<tr>
<td>Soybeans</td>
<td>$6.35</td>
</tr>
<tr>
<td>Wheat</td>
<td>$4.39</td>
</tr>
</tbody>
</table>

If U.S. cash price is expected to average above breakeven price through 2012 crop, expected payments from ACRE are higher despite its lower direct payments.

Actual payments from ACRE revenue program may be zero even if market price is above the breakeven price.


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A Reason for Consecutive Year ACRE Payments is 10% Limit on Year-to-Year Change in Guarantee

Share of Years ACRE Cup/Cap Effective, 26 State Average

Cup is the name for a 10% limit on declines in ACRE revenue guarantee from prior year’s guarantee. Cap is the name for a 10% limit on increases in ACRE revenue guarantee from prior year’s guarantee.


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State Yield Declines Were an Important Trigger for ACRE Payments

Share of Years with ACRE Revenue Payment That Also had a State Yield Decline of 10% or More, Average for 26 States

<table>
<thead>
<tr>
<th>Crop</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn</td>
<td>49%</td>
</tr>
<tr>
<td>Soybeans</td>
<td>50%</td>
</tr>
<tr>
<td>Wheat</td>
<td>61%</td>
</tr>
</tbody>
</table>

An ACRE payment was made in approximately two-thirds of the years in which state yield declined by 10%.

ACRE has a double trigger that must be met before a payment is made:
(1) State realized revenue for crop is less than 90% of state’s ACRE revenue guarantee
(2) Farm realized revenue for crop is less than farm’s ACRE expected revenue

Source for farm data is Illinois Farm Business Farm Management project. Data set is 552 farms with corn and soybean acres each year from 1996 through 2006. Year-to-year change is measured as (ln change).
Change in State Yield Explained a Small Share of Change in Yield on Individual Illinois Farms

Average Share of Year-to-Year Change in Farm Yield Explained by Year-to-Year Change in State Yield, Illinois, 1996-2006

<table>
<thead>
<tr>
<th></th>
<th>Corn</th>
<th>Soybeans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>35%</td>
<td>44%</td>
</tr>
</tbody>
</table>

Source for farm data is Illinois Farm Business Farm Management project. Data set is 552 farms with corn and soybean acres each year from 1996 through 2006. Year-to-year change is measured as (ln change).
ACRE: Some Initial Thoughts on Implications

1. ACRE provides risk protection against revenue declines that extend beyond crop insurance’s planting-harvest period. 
   (a) Should encourage short-term, multiple year investments, such as potassium and phosphorus application.

2. ACRE is most likely to benefit:
   (a) Farmers whose planted and base acres differ substantively
   (b) States with higher yield variation
       (includes southeast & mid-Atlantic states)
   (c) Crops with prices well above loan rates
       (cotton and peanuts closest to loan rate)
   (d) States with lower negative correlations between changes in state yield and U.S. price (revenue variability is higher)
   (e) States and crops, notably corn, with larger increases in yields
ACRE: Some Initial Thoughts on Implications

3. ACRE is a poor substitute for crop insurance. A farmer who elects ACRE should carefully consider purchasing crop insurance to help manage the production risks associated with his/her farm.

4. ACRE’s expected payment (not maximum or actual payments) should be capitalized into the value of land.

5. Because ACRE does not provide a floor, farmers will have to adjust to lower market revenues although their adjustment time is lengthened.

6. While ACRE likely will be classified as amber box under World Trade Organization guidelines, its distortion of trade is limited by the fact that its payments approaches zero within a few years.
Contemporary and Future Policy Research Questions

1. What are price correlations across years (time path tendencies)?
   * What are the short and intermediate term elasticities of supply in a freedom-to-plant world?
   * What are the short and intermediate term elasticities of demand when food is not the only use of farm crops?

2. What is the interface between crop insurance, farm support programs, and the supplemental revenue assistance program?
   * What type of integration between insurance and support programs is optimal?

3. What is the share of farm risk that is systemic and idiosyncratic?
   * What are the correlations between yields and revenue at the farm and higher aggregation levels: county, state, U.S.?

4. What are the World Trade Organization implications of ACRE?

5. What are farmers’ risk and policy tool preferences?
Questions

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ACRE Mechanics: Thumbnail Sketch

ACRE is a crop specific, state revenue risk management program.

To receive an ACRE payment, 2 triggers must be met:

1. State’s realized revenue (state yield times U.S. market year cash price for crop year) is less than state’s revenue guarantee for crop.
   a. ACRE’s per acre state revenue guarantee for a crop is: \( [(90\%) \times \text{moving average of U.S. crop year cash price for 2 most recent years}] \times \text{Olympic moving average of state’s yields for 5 most recent years}] \).
   * Revenue guarantee cannot change more than 10% from prior year’s guarantee
   * ACRE’s payment is capped at 25% of state revenue guarantee
   b. State revenue payment is adjusted to individual farm by yield ratio

2. Individual farm’s revenue for crop less than its ACRE benchmark revenue.
   a. Farm’s actual revenue for crop is: \( \text{farm’s actual yield} \times \text{U.S crop year price} \)
   b. Farm’s ACRE benchmark revenue for crop is: \( [(\text{Olympic average of farm’s yields for 5 most recent years}) \times \text{moving average of U.S. crop year cash price for 2 most recent years}] \) plus (per acre insurance premium paid by farmer for crop)

Payment based on acres planted to crop, but ACRE payments cannot be received on more than farm’s total base acres.


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Appendix: Brief Outline of Analytical Parameters of the Breakeven Price Analysis

(1) Breakeven price is an average of the weighted average breakeven price derived from two analyses, both involving 26 states and using data for 1974-2006 crop years. One analysis used (a) percent deviation for a state’s yield for a year from its trend-line yield estimated using linear regression and (b) percent deviation of U.S. price for a year from the average price for 1974-2006. The second analysis used (a) percent ratio of a state’s yield for a year relative to the state’s average yield for 1974-2006 and (b) percent deviation of U.S. price for a year from the average price for 1974-2006. A weighted average breakeven price was calculated for both analyses. The weight was the state’s share of acres planted to the crop in the 26 states in 2006-08. The 26 states accounted for 94%, 96%, and 83% of U.S. acres planted to corn, soybeans, and wheat, respectively, in 2006-08. The yield distribution was centered on the average yield used by the Congressional Budget Office for 2009–12.

(2) The data for historical prices, yields, and acres are from the U.S. Department of Agriculture.

(3) Program parameters are from 2008 Farm Bill. Marketing loan and price counter-cyclical prices are for 2010-12. The 83.3% payment factor is used. Planted acres are assumed to sum to base acres.

(4) The calculation for ACRE does not include separate programs for irrigated and dryland acres when at least 25% of a state’s acres are irrigated and at least 25% are in dryland production.

(5) No adjustment was made for the change in calculating loan deficiency payments: a 30-day moving average of cash prices replaces a single day’s cash price.