RISK MANAGEMENT – LESSONS FROM THE US FARM BILL

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US and OECD Producer Support Estimate

Percent of gross farm receipts (including support)

Data: OECD.
Last farm bill & unique economic conditions

Net farm income (rhs)

US deficit (lhs)

Data: USDA, CBO.
And crop insurance was seen to be successful...

Data: USDA.
2014 changes to risk management

Title I – Commodity program changes

• Moved direct payments to a counter-cycle basis
  • Revenue program – Agriculture Risk Coverage (ARC)
  • Fixed price program – Price Loss Coverage (PLC)
  • Uses “base acres”

• Dairy price support shifted to an insurance-type of program

Title XI – Crop insurance changes

• Mainly kept framework unchanged
Title I commodity programs

In 2014, a producer with base acres had to choose
• Whether to enroll in ARC or PLC
• Whether to reallocate base acres or update program yield
• No chance to change until the 2019 crop season

Details
• No cost
• Administered by USDA (payment arrives after all the crop is sold and market year average price is established)
• Effectively decoupled
  o Does not require base crop to be grown
  o Only paid on base acres
• Conservation compliance
Most corn and soybean base acres enrolled in ARC

<table>
<thead>
<tr>
<th>Commodity</th>
<th>PLC Base Acres</th>
<th>PLC Percent</th>
<th>ARC Base Acres</th>
<th>ARC Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>BARLEY</td>
<td>3,876,590</td>
<td>57%</td>
<td>1,127,214</td>
<td>42%</td>
</tr>
<tr>
<td>CANOLA</td>
<td>1,436,766</td>
<td>93%</td>
<td>31,814</td>
<td>7%</td>
</tr>
<tr>
<td>CORN</td>
<td>6,388,066</td>
<td>9%</td>
<td>90,057,276</td>
<td>91%</td>
</tr>
<tr>
<td>GRAIN SORGHUM</td>
<td>5,965,661</td>
<td>54%</td>
<td>2,998,211</td>
<td>46%</td>
</tr>
<tr>
<td>LONG GRAIN RICE</td>
<td>4,007,809</td>
<td>99%</td>
<td>6,912</td>
<td>1%</td>
</tr>
<tr>
<td>PEANUTS</td>
<td>2,013,443</td>
<td>99%</td>
<td>6,781</td>
<td>1%</td>
</tr>
<tr>
<td>SOYBEANS</td>
<td>1,688,365</td>
<td>4%</td>
<td>52,635,553</td>
<td>96%</td>
</tr>
<tr>
<td>WHEAT</td>
<td>27,045,581</td>
<td>34%</td>
<td>35,394,613</td>
<td>66%</td>
</tr>
<tr>
<td><strong>U.S. Total</strong></td>
<td><strong>52,422,282</strong></td>
<td><strong>22%</strong></td>
<td><strong>182,258,375</strong></td>
<td><strong>75%</strong></td>
</tr>
</tbody>
</table>

Data: USDA.
ARC: 2015 for McLean, Ill. w/ 100 base corn acres
[Farmer cost = $0; can grow any crop on those acres]

1. Benchmark corn price (5-year Olympic average = $5.29/bu)
2. Benchmark corn yield (5-year Olympic average for McLean County = 173 bu / acre)
3. Benchmark revenue = $915 / acre
4. County guarantee = $915 x 0.86 = $787 / base acre
5. Maximum rate = $915 x 0.10 = $91.50 / base acre

6. 2015 actual price = $3.61
7. 2015 actual yield = 199 bu / acre in McLean County
8. 2015 actual revenue = $718 / acre for McLean County
9. ARC payment = ($787-$718)x(100x0.85) = $5,780

Data: USDA.
### 2015 example: Central Illinois farmer with corn base enrolled in ARC

<table>
<thead>
<tr>
<th>County</th>
<th>Rev guarantee</th>
<th>Yield bu/acre</th>
<th>Price $/bu</th>
<th>Actual rev $/acre</th>
<th>Payment $/acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piatt</td>
<td>$769</td>
<td>221</td>
<td>$3.61</td>
<td>$798</td>
<td>$0</td>
</tr>
<tr>
<td>McLean</td>
<td>$787</td>
<td>199</td>
<td>$3.61</td>
<td>$718</td>
<td>$69</td>
</tr>
</tbody>
</table>

Data: USDA.
ARC payments are expected to fall after 2019

Data: CBO.
Crop insurance examples

Each year a farmer can choose
- Acres of which crop to cover
- Type of insurance product: yield, revenue, area, etc.
- Amount of coverage to purchase [50% to 85%]

Requirements
- Farmer pays (ranging from 20% to 62% of fair premium)
- Data on expected yield and yield variance
- Futures and options markets for prices and price variance
- Private sector participation: information about choices, sells the policy, and services the policy (payment arrives quickly after a loss)
- Conservation compliance
Crop insurance example

Farm in Mclean County, Illinois

- 500 acres corn
- Expected yield = 183 bu/acre
- Expected price = $3.86 / bu
- Expected revenue = $706/acre, or $353,000

- 80% coverage revenue insurance = $565/acre, or a liability of $283,000

- Fair premium = $12/acre, or $6,025
- Farmer pays $3.86/acre, or $1,930
- Govt subsidies $8.19/acre, or $4,095
Crop insurance examples

Farm in McLean County
- 500 acres corn
- Actual yield = 199 bu/acre
- Actual price = $3.49 / bu
- Actual revenue = $695/acre, or $347,000
- No indemnity payment made
Crop insurance examples

**Ex. 1**
- Yield down 20%
- Price as realized (-10%)
- Loss = $54/ac, or $27,000

**Ex. 2**
- Yield down 10%
- Price down 15%
- Loss = $25/ac, or $12,000

**Farmer payment = $1,930**
- 80% yield policy would have been $1,236
Loss ratio (indemnities/premiums)

Data: USDA.
Growth in the US crop insurance program

Data: USDA.
Crop insurance liabilities heavily weighted to revenue protection plans

<table>
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<tr>
<th>Protection Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARH/Revenue Protection*</td>
<td>70.3%</td>
</tr>
<tr>
<td>APH/Yield Protection**</td>
<td>21.0%</td>
</tr>
<tr>
<td>Other***</td>
<td>5.7%</td>
</tr>
<tr>
<td>STAX/SCO revenue</td>
<td>0.4%</td>
</tr>
<tr>
<td>Whole-farm revenue</td>
<td>2.6%</td>
</tr>
</tbody>
</table>

*Includes Area Revenue Protection (ARP). **Includes SCO yield and Area Yield Protection (AYP). ***Includes dollar value protection, and rainfall/vegetation index plans. ARH = Actual Revenue History; APH = Actual Production History; STAX = Stacked Income Protection Plan; SCO = Supplemental Coverage Option.

Data: USDA.
Livestock insurance liabilities rise, especially for beef

Data: USDA.
Indemnities are below producer premiums in many years

Data: USDA.
Milk costs outstripping price

Data: USDA.
Dairy Safety Net in the 2014 Farm Bill

- 75% of expected 2016 milk production covered under MPP-Dairy (60% at catastrophic coverage level)
- Approximately 15% of milk covered by CME and other private risk management tool
- Less than 5% covered by LGM-Dairy.

Bozic et al (2016)
MPP example: 500 cow operation in MN; 10 million pounds of production

• In 2015, this producer bought up MPP coverage on 90% of the operation’s production history to a margin of $6.50 at a cost of $0.29 per CWT = $17,500.
• In 2015, MPP margins never fell below $7.50 / CWT
• No payments

• In 2016, this producer decided to buy-up on MPP to $6.50 on only 50% of production history and keep the default $4.00 margin on the remaining 40%. Cost = $7,200
• In 2016, MPP margin fell below $6.50 once. Indemnity to this producer would have been about $2,300
Dairy margins recently fell within MPP coverage levels

$11 mill in payments for 2016
Out of $20 mill in premiums

Data: USDA.
Thanks!

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http://www.usda.gov/oce/forum/

Upcoming reports

December 9 --- WASDE Crop Production

December 23 --- Cattle on Feed
Quarterly Hogs and Pigs

http://www.usda.gov/oce/commodity/wasde/Secretary_Briefing.pdf