The Impacts of Alternative Farm Bill Design on U.S. Agriculture

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Given high prices—where's the money

2006 CBO Baseline

- Counter-cyclical
- Crop Insurance
- LDP
- Direct

2008 CBO Baseline

- Counter-cyclical
- Crop Insurance
- Direct
- LDP
Domestic Policy and Trade

- Tension between WTO commitments and producer group desires for domestic policies
- What’s really new in the 2007 debate – revenue designs
  - Sought most by Midwestern corn growers
  - Little enthusiasm from others
Revenue Variability

Corn Revenue Coefficient of Variation

CV
- <= 20%
- 30%–40%
- 40%–50%
- 50%–100%
- 20%–30%
Price-Yield Correlation

Corn Price—Yield Correlations

Correlation:
- Red: $\leq -0.25$
- Green: $-0.25% - 0.25$
- Orange: $> 0.25%$
Revenue Designs

- As proposed, not really more WTO-compliant
- What do they do to aggregate outlays?
- What do they do to producer risk reduction?
- Can the same level of safety net be achieved for a lower government cost?
Variations on the Revenue Theme

- Spatial Aggregation
  - National
  - State
  - County

- Across commodities
  - Permanent disaster bill
  - Commodity-specific
  - Net

- Integration with other programs
  - Crop insurance wraps
  - LDP replacement

- Target revenue
  - Legislatively-determined
  - Market-based
Options Examined

- Continuation of Current Policy
- House Bill with Price Counter-Cyclical
- House Bill with Nation Revenue Counter-Cyclical
- Senate ACR as Passed from Committee
- Senate ACR with a Crop Insurance Wrap
- Senate Producer’s Choice between Current Programs and ACR
Our Analysis

- Results simulate representative corn, cotton, wheat, and soybean revenue from each of hundreds of counties.
- Models incorporate price and yield risk, and includes county and other aggregate stochastic variables.
- Importantly, the system provides a forecast of program payments into the future (like FAPRI, A&M, and CBO).
- Models allow estimates of the risk reduction and government payouts under alternative designs if implemented for 2008-2012.
Model Design

- Market-year average prices from NASS, 1974-2005
  - Relative price changes are computed
- County, state, and national yields from NASS, 1975-2005
  - Yields detrended
- Representative farm-level yield variability obtained by:
  \[ \tilde{Y}_{ft} = \mu_f + \beta (\tilde{y}_c - \mu_c) + \varepsilon_{ft} \]

\[ \text{Min} \left| PR_{65} - ELC_k \right|, \quad \text{where} \quad ELC_k = E \left[ \frac{P_g (C\mu_f - \tilde{y}_{ft_k})}{P_g C\mu_f} \right] \]
Model Design

- Starting price = September 2007 futures market prices for 2008 delivery months
- The national marketing year average (MYA) price in year t is obtained by taking the expected price in year t-1 and multiplying it by the historical price change associated with the random draw on national yield.
Methods: Revenue Simulation

$\text{5 years} \times 500 \text{ iterations} = 2500 \text{ random draws}$
Methods: Random Draw

\[ Y_{ft} \rightarrow Y_{ct} \rightarrow Y_{St} \rightarrow Y_{Nt} \rightarrow P_{Rt} \rightarrow C_t \]
\[ Y_{fn+1} \rightarrow Y_{cn+1} \rightarrow Y_{Sn+1} \rightarrow Y_{Nn+1} \rightarrow P_{Rn+1} \rightarrow C_{n+1} \]
\[ Y_{ft+1} \rightarrow Y_{ct+1} \rightarrow Y_{St+1} \rightarrow Y_{Nt+1} \rightarrow P_{Rt+1} \rightarrow C_{t+1} \]
\[ Y_{ft+25} \rightarrow Y_{ct+25} \rightarrow Y_{St+25} \rightarrow Y_{Nt+25} \rightarrow P_{Rt+25} \rightarrow C_{t+25} \]
## Aggregate 5-year average per acre payments

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Soybeans</th>
<th>Corn</th>
<th>Cotton</th>
<th>Wheat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Program</td>
<td>$26.47</td>
<td>$44.04</td>
<td>$111.53</td>
<td>$26.70</td>
</tr>
<tr>
<td>House PCCP</td>
<td>$27.52</td>
<td>$44.04</td>
<td>$105.79</td>
<td>$27.61</td>
</tr>
<tr>
<td>House with RCCP</td>
<td>$29.12</td>
<td>$45.33</td>
<td>$117.40</td>
<td>$27.72</td>
</tr>
<tr>
<td>Senate PCCP</td>
<td>$33.58</td>
<td>$44.04</td>
<td>$111.53</td>
<td>$36.27</td>
</tr>
<tr>
<td>Senate RCCP</td>
<td>$32.27</td>
<td>$39.33</td>
<td>$48.40</td>
<td>$37.24</td>
</tr>
</tbody>
</table>
Corn Total Government Payments with House National Revenue Counter—Cylical

Corn Total Government Payments with Current Programs

HousePCCP: $0–25, $25–35, $35–45, > $45

CurrentPCCP: $0–25, $25–35, $35–45, > $45
## The Effect of Wrapping Insurance Around Revenue Programs

<table>
<thead>
<tr>
<th>Rate Reduction from wrapping Individual-coverage revenue insurance around:</th>
<th>Soybeans</th>
<th>Corn</th>
<th>Cotton</th>
<th>Wheat</th>
</tr>
</thead>
<tbody>
<tr>
<td>- House National Revenue Plan</td>
<td>86.38%</td>
<td>93.58%</td>
<td>93.22%</td>
<td>92.05%</td>
</tr>
<tr>
<td>- Senate State Revenue</td>
<td>80.91%</td>
<td>82.14%</td>
<td>89.47%</td>
<td>77.84%</td>
</tr>
</tbody>
</table>
Distribution of 2010 Government Payments
Final Thoughts

- Is there really a desire for risk efficient policy?