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Risky Business: Measuring Monetary and Nonmonetary Benefits of Insurance Programs

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declines in farm income across all scenarios, land values also show decreases compared to baseline values. In 2004, the final year of the projection period, all three of the scenarios have nominal land values projected above what they were in 1994, though not as high as they would be with continuation of current programs. The baseline projects a 15 percent increase in average nominal land values from 1994 to 2004 compared with 11.6 percent for the Marketing Loan option, 8.6 percent for the Revenue Assurance option, and 5.4 percent for the No-Program option. However, some regions would see nominal land values decline from current levels, the most severe declines being under a No-Program option. The implication is that only with the No-Program option are financial markets likely to be severely strained. There would be regional variation with elimination of commodity programs of course. For instance, rice net returns decline significantly compared to a relatively modest impact on corn net returns. Thus, some regions would find credit markets strained more severely than others.

Conclusions

The three policy options discussed here share one policy continuation (CRP is continued) and one major policy shift (ARPs and 0/50-85/92 programs are eliminated). Also, as crop base restrictions are eliminated, with the exception of the Marketing Loan option, the market drives production decisions and shifts of acreage between crops. For the Marketing Loan option, production decisions are driven by the loan rates rather than the market prices. Further, in all scenarios government stockholding is reduced and, for the most part, stocks of most commodities remain low compared to historical patterns.

Farm income tends to decline in all of the alternatives and the decline in the No-Program option is severe enough to generate real concerns about disruption of financial/credit sectors. Land values decline relative to baseline projections, but average nominal land values at the end of the period are higher than 1994 in all scenarios. It is interesting to note that in the year 2004, even without insurance indemnities or nonmonetary risk reduction benefits included in the analysis, net farm income is highest for the Revenue Assurance alternative. And if increased insurance benefits are added, net farm income, plus increased insurance benefits under this plan, recovers to levels close to the baseline and at a much lower cost to the U.S. government.

Risky Business: Measuring Monetary and Nonmonetary Benefits of Insurance Programs

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Because farmers are exposed to a relatively large amount of business risk, aspects of government farm programs designed to remove or reduce risk can be of particular importance. Given a choice between a very risky activity and a slightly less profitable activity with much lower risk, many farmers (or their bankers) will choose the less risky activity. These aspects of programs can be viewed in terms of having a direct monetary impact on expected profitability, and an indirect, very illusive, nonmonetary impact on producer welfare. In the final analysis, it may not be preferable to have programs that increase expected profitability but also increase volatility in a producer’s cash flow. It may be more desirable to have a program that results in slightly lower levels of expected profitability but reduces cash flow volatility and reduces producer risk.

It is very difficult to incorporate these risk effects into policy models because it is impossible to anticipate weather patterns and other sources of risk over the projection period. However, if we completely ignore these risk effects, policy analysis results will be biased against programs that are designed primarily to reduce risk. A comparable situation exists if one is evaluating two employment opportunities that have the same salary but only one provides full medical insurance coverage. The income numbers are the same, but the full remuneration package is much different. This issue is particularly important to the revenue assurance farm bill proposal because, under this plan, in an "average" year (i.e., the type of year incorporated in most projections and baselines), no farmer would receive a cash payment, but the risk structure is much different.

For Iowa’s agricultural producers and rural communities, this question translates into, “Is the value of a dollar’s worth of government payments received in bad crop years when cash flow is strained any different from a dollar in payments made in good years when cash is more abundant?” Technically, the answer to this question is that a dollar is just a dollar. However, if we remember the floods of 1993, the underlying value of disaster payments that prevented financial chaos for families all over the Midwest was higher than if that same amount of money were to be transferred.
How to Measure Risk Reduction

The method economists use to measure the benefits of risk reduction revolves around how much individuals would be willing to pay to have their risk eliminated or reduced. To do this, we calculate the amount of money typical producers would be willing to accept for certain in exchange for the risky outcome they might otherwise face. For example, suppose a farmer expects to make an average of $50,000 per year raising hogs, but would be just as happy making $45,000 per year raising hogs if all the revenue uncertainty associated with raising hogs were eliminated. Then we can say that the certainty equivalent of a $50,000 per year hog operation is $45,000. Here $50,000 is the expected average revenue and $45,000 is the “certainty equivalent” return.

This situation is similar to the common practice of purchasing homeowners insurance. Even though homeowners pay in far more in premiums than they ever expect to collect in indemnities, the value of risk reduction outweighs the costs. Because the risk associated with even one occurrence has the potential to be catastrophic, people generally are willing to pay premiums over and above indemnities in order to reduce risk.

These concepts have implications for the interpretation of results presented in the previous article on farm bill analysis. All three of the scenarios analyzed and discussed in the previous article have fundamentally different risk structures for producers. Yet, due to the inherent difficulty of measuring benefits of risk reduction, no measure of changes in producer risk was provided, nor did we indicate how producer welfare is impacted by these changes. This, again, is equivalent to comparing job salaries but not inquiring about health insurance coverage.

Revenue Assurance Benefits

To partially compensate for these difficulties, researchers at CARD have utilized standard procedures in economics to evaluate how a “typical” Iowa farmer would benefit from a Revenue Assurance program. This research shows that, at the 70 percent guarantee level, for each dollar of government spending on revenue assurance, farmers generally receive at least two dollars worth of benefits (see CARD Briefing Paper 95-BP 7). Therefore, as a rule of thumb, revenue assurance benefits to producers can be calculated by multiplying the insurance indemnities by two.

Now, taking the FAPRI numbers on indemnities and net farm income listed in the previous section and employing the “95-BP 7” rule of thumb, we have:

Estimated Annual Insurance Benefits (calculated as two times insurance indemnities)

<table>
<thead>
<tr>
<th>Fiscal Years</th>
<th>Baseline Value</th>
<th>Marketing Loan</th>
<th>Revenue Assurance</th>
<th>No-Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996-2000</td>
<td>$2.12 billion</td>
<td>No Change</td>
<td>Up $0.94 billion</td>
<td>No Change</td>
</tr>
<tr>
<td>2004</td>
<td>$2.10 billion</td>
<td>No Change</td>
<td>Up $1.3 billion</td>
<td>No Change</td>
</tr>
</tbody>
</table>

Average Annual Net Farm Income Plus Estimated Insurance Benefits (in dollar terms)

<table>
<thead>
<tr>
<th>Fiscal Years</th>
<th>Baseline Value</th>
<th>Marketing Loan</th>
<th>Revenue Assurance</th>
<th>No-Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996-2000</td>
<td>$45.60 billion</td>
<td>$44.44 billion</td>
<td>$43.67 billion</td>
<td>$38.71 billion</td>
</tr>
<tr>
<td>2004</td>
<td>$54.55 billion</td>
<td>51.58 billion</td>
<td>$53.30 billion</td>
<td>$50.50 billion</td>
</tr>
</tbody>
</table>

Average Annual Net Farm Income Plus Estimated Insurance Benefits (percent change from baseline)

<table>
<thead>
<tr>
<th>Fiscal Years</th>
<th>Baseline Value</th>
<th>Marketing Loan</th>
<th>Revenue Assurance</th>
<th>No-Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996-2000</td>
<td>$45.60 billion</td>
<td>Down 2.5%</td>
<td>Down 4.2%</td>
<td>Down 15.1%</td>
</tr>
<tr>
<td>2004</td>
<td>$54.55 billion</td>
<td>Down 5.4%</td>
<td>Down 2.3%</td>
<td>Down 7.4%</td>
</tr>
</tbody>
</table>

The listed values illustrate that in the early years, the Marketing Loan program has a slightly higher combined worth to producers than Revenue Assurance, albeit at a much higher government cost. At the end of the projection period, however, Revenue Assurance surpasses the Marketing Loan program by almost $2 billion. Interestingly, if one makes a comparison to the baseline that includes government insurance benefits, the Revenue Assurance proposal returns benefits to producers similar to baseline values and with significant taxpayer savings.