# Alternative AMTA and Loan Rate Options for Program Crops With Counter Cyclical Payments Triggered at the National and State Level

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### Executive Summary

This analysis focuses on four policy options, based on national formulas where implications are examined for varying levels of loan rates and base AMTA payment rates.

In all scenarios the following assumptions were utilized:

- All LDP payments are made on 2001 acreage and yield

- All counter cyclical payments are made on 2001 acreage and yield

- All base AMTA payments are made using the formula in the 1996 farm program

- Each of the options are evaluated around 4 different base periods and 3 added AMTA payment rates

- Each added AMTA payment is made using the formula in the 1996 farm program

The four scenarios reported in this briefing paper are:

Scenario 1.  Hold all loan rates at current level, but increase the base AMTA for rice to $2.56 cwt. and adjust all other crops proportionately.

Scenario 2.  Increase the rice loan rate to $7.54 cwt. a level that reflects the additional AMTA payment received by soybean producers in 1998, 1999 and 2000.  Adjust all other loan crops proportionally.  Increase the base AMTA to $2.56 cwt. and adjust all other crop's AMTA proportionally.

Scenario 3.  Increase the rice loan rate to $7.54 cwt. and all other crops proportionately. Adjust the base AMTA to $2.10 cwt., 2001 rate, and hold all other crops at current payment levels.

Scenario 4.  Increase the rice loan rate to $7.54 cwt. and all other crops proportionately. Adjust the base AMTA to $2.04 cwt., the designated level for 2002 in the current farm bill. All other crops are paid at the 2002 base AMTA level.

\* Note: All base and supplemental AMTA is paid on the 1996 farm bill formula - frozen base and yield.

\* The base scenario was modified to include the new loan and AMTA defined in each of the four scenarios, but does not reflect additional CCP or the Added AMTA payment.

## Method of Analysis

A risk analysis of a national counter cyclical payment (CCP) program for six crops was completed for one year. National planted acre yield risk over the 1986-2000 period was used with FAPRI's stochastic projection of crop prices for 2001 in the analysis. Four alternative base periods for triggering a CCP were evaluated. Three Added AMTA scenarios and a Base scenario of no additional market loss or CCP were also run for each of the crops.

In the first part of this study, the four base periods for the CCP were defined as:

- Simple Average 1994-1998
- Simple Average 1995-1999
- Olympic Average 1994-1998
- Olympic Average 1995-1999

Alternative base periods for a CCP program were also reported in this paper:

- Olympic Average 1991-1995
- Olympic Average 1992-1996
- Olympic Average 1993-1997
- Olympic Average 1996-2000

Average base revenue per planted acre, used to trigger a CCP, was calculated as follows for the two Simple Average base period scenarios:

- Calculate national planted acre yield for each of 5 years

  National planted acre yield = national production / national planted acres

- Calculate national market receipts per planted acre for each of 5 years

  National market receipts per planted acre = national season average price * national planted acre yield

- Calculate the average national market receipts per planted acre calculating a simple average of the 5 years of receipts.

For the Olympic Average base period scenarios, the same formulas were used but the effective average for triggering a payment was calculated ignoring the lowest and highest market revenues.

A simulation analysis was done using historical yield and price variability for each of the crops. Historical correlation of prices and yields over the 1986-2000 period was assumed to continue for the present study. A CCP was paid when the per acre simulated market receipts were less than the average base revenue for a particular CCP scenario. The simulation analysis repeated the sampling process for 100 replications or iterations so the risk of receiving a CCP could be estimated. The formulas for calculating a CCP were:

Stochastic market receipts = Stochastic price for 2001 * Stochastic national planted acre yield

If (stochastic market receipts < average base receipts per acre) then the payment equals CCP = average base receipts - stochastic market receipts

Because the market receipts were both expressed on a per planted acre basis, the CCP would be paid to producers based on the number of acres they planted. The cost of the program was estimated using USDA's recent planting estimates for the 2001 crop year.

The Added AMTA scenarios assumed that the announced 2001 AMTA payment rate would be augmented by a fixed amount. Three alternative Added AMTA scenarios were analyzed for each crop. The added AMTA rates were:

- Rice – $2.25, $2.50, $2.75/cwt.
- Cotton – $0.067, $0.074, $0.081/lb.
- Corn – $0.295, $0.328, $0.361/bu.
- Wheat – $0.565, $0.628, and $0.69/bu.
- Soybean – $0.061, $0.067, and $0.074/bu.
- Sorghum – $0.248, $0.275, and $0.303/bu.

The Added AMTA payments were analyzed assuming that the payments were made based on the 1996 farm program formula for calculating AMTA payments.

A Base scenario was run for comparison purposes. Market receipts per planted acre equaled stochastic yield times price. The per unit loan deficiency payment (LDP) was calculated using the stochastic prices and estimated adjusted world prices, the 2001 loan rate and the stochastic yield. Base AMTA payments were calculated using the 1996 farm program formula for calculating this payment. The total receipts for the Base scenario were used along with the CCPs or Added AMTA payments to calculate a total receipts per yield unit for the crops. Based on the ratio of rice base acres to planted acres in 2001, it is assumed that every planted acre carries approximately 1.27 contract payment acres. Similar ratios were applied to the other crops.

While we acknowledge that there are crop contract acre payments that do not accrue to current operators, it was decided that the assumption would be preferable to assuming every planted acre has only one associated contract acre. In summary, the primary eight alternatives analyzed include:

- Base – projected market receipts, loan deficiency payments, and $2.10/bu. AMTA payments. No additional CCP payments are included.
- Avg 95-99 – Base revenue plus an additional CCP triggered when 2001 market receipts fall below the average market receipts on a planted acre basis for the 95-99 marketing year.
- Avg 94-98 – Base revenue plus an additional CCP triggered when 2001 market receipts fall below the average market receipts on a planted acre basis for the 94-98 marketing year.

- Olym Avg 95-99 – Same as Avg 95-99, except the high and low market year receipts are dropped and the remaining three years are averaged as the base.
- Olym Avg 94-98 – Same as Avg 94-98, except the high and low market year receipts are dropped and the remaining three years are averaged as the base.
- AMTA $2.25 – Assumes producers receive an additional $2.25 AMTA paid on the 1996 farm bill formulas for planted acres.
- AMTA $2.50 – Assumed producers receive an additional $2.50 AMTA paid on the 1996 farm bill formula for planted acres.
- AMTA $2.75 – Assumed producers receive an additional $2.75 AMTA paid on the 1996 farm bill formula for planted acres.

Results of the simulation analysis were reported in a probabilistic format for each crop, using the following variables:

- CCPs or Added AMTA payments per yield unit (cwt,, lb., or bu.),
- Total receipts per yield unit as defined above, and
- Total government payments in 2001 for each crop.

In addition the scenarios were ranked for each crop using a risk ranking procedure assuming that farmers are averse to risk.  The procedure also reported the marginal economic benefit of the preferred program option to the alternative scenarios.

**Table 1.  Four Scenarios with Alternative Loan Rates and Base AMTA Rates for Six Program Crops**

|  |  | Loan Rates | Base AMTA |
|---|---|---|---|
| **Scenario 1** | Rice ($/cwt.) | 6.50 | 2.56 |
|  | Cotton ($/lb.) | 0.519 | .0695 |
|  | Corn ($/bu.) | 1.89 | .3291 |
|  | Wheat ($/bu.) | 2.58 | .575 |
|  | Soybean ($/bu.) | 5.26 | 0 |
|  | Sorghum ($/bu.) | 1.71 | 0.3925 |
| **Scenario 2** | Rice ($/cwt.) | 7.54 | 2.56 |
|  | Cotton ($/lb.) | 0.60 | .0695 |
|  | Corn ($/bu.) | 2.19 | .3291 |
|  | Wheat ($/bu.) | 2.99 | .575 |
|  | Soybean ($/bu.) | 6.10 | 0 |
|  | Sorghum ($/bu.) | 1.98 | 0.3925 |
| **Scenario 3** | Rice ($/cwt.) | 7.54 | 2.10 |
|  | Cotton ($/lb.) | 0.60 | .057 |
|  | Corn ($/bu.) | 2.19 | .27 |
|  | Wheat ($/bu.) | 2.99 | .4717 |
|  | Soybean ($/bu.) | 6.10 | 0 |
|  | Sorghum ($/bu.) | 1.98 | .322 |
| **Scenario 4** | Rice ($/cwt.) | 7.54 | 2.04 |
|  | Cotton ($/lb.) | 0.60 | 0.056 |
|  | Corn ($/bu.) | 2.19 | 0.26 |
|  | Wheat ($/bu.) | 2.99 | 0.4578 |
|  | Soybean ($/bu.) | 6.10 | 0 |
|  | Sorghum ($/bu.) | 1.98 | .3126 |