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Potential Impacts of WTO Negotiations on U.S. Agricultural Policy and Policy Alternatives

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Future U.S. agricultural policy could be influenced significantly by the World Trade Organization (WTO). The current round of WTO negotiations call for cuts in permitted levels of domestic subsidies, export subsidies, and tariffs. While there was little progress at the Hong Kong ministerial meeting in December 2005, WTO members have committed themselves to finishing negotiations by the end of 2006. The proposals by the United States, the EU, and other members strongly suggest a steep cut in domestic subsidies and the elimination of export subsidies. For example, the WTO limit for U.S. amber box payments is \$19.1 billion per year, and U.S. amber box spending has been \$14 - \$17 billion per year¹. However, the U.S. proposal calls for a 60% cut in the payment cap to \$7.6 billion, and other members' proposals call for even greater cuts. The United States and other members have also proposed to reduce the cap on blue box and de minimis payments.

If the U.S. proposal or a similar measure is adopted, the 2007 farm bill would differ significantly from the 2002 farm bill. Amber box payments, which include marketing loan deficiency payments, would have to be cut significantly. Loan deficiency payments and counter-cyclical payments under the current farm bill reduce uncertainty and increase farm income, but these programs would be less effective under the WTO proposals. If all trade-distorting domestic support is reduced by 60%, average net farm income in North Dakota would drop by almost 50%, and the variability in income would increase by 47%. This illustrates the importance of government payments.

There is some discussion whether the counter-cyclical program should be classified as blue or amber box. If it is classified as blue box, the required cuts would not be as severe, but the proposed cap on the blue box would limit the effectiveness of these payments. Maintaining the current farm program structure would require significant reductions in loan rates, target prices, and milk and sugar price support levels. Alternatively, more comprehensive reform could be enacted, which could include a shift in payments to non-trade-distorting green box subsidies not limited by the WTO.

Revenue or Income Insurance Program

One alternative is to introduce a revenue or income insurance program which will reduce uncertainty in farm income stemming from variations in both yields and market prices. The program would be fully funded by the government in the place of the counter-cyclical and loan programs. The insurance program could be classified as green box if it is at the 70% level, and it may be more efficient in minimizing uncertainty in price and yield than the current counter-cyclical and marketing loan programs, but it does not necessarily increase farm income to a desirable level. An increase in direct payments, which are classified as blue or green box, coupled with the revenue insurance program, may provide additional income to farmers with reduced uncertainty.

Without government payments, the possibilities of small-, medium-, and large-size farms in North Dakota not having sufficient gross revenue to generate positive net farm income are 13%, 38%, and 18%, respectively. With revenue insurance, only the medium-size farm has a possibility greater than 10% of failing to generate enough gross revenue to provide positive net farm income. The average revenue is \$224 thousand with no government support and \$232 thousand with the revenue insurance proposal, with a revenue variation of

¹Domestic subsidies are categorized into the green, blue, and amber boxes according to how they are deemed to distort trade. Green box subsidies are non-trade distorting or minimally distorting, while amber box subsidies are the most trade distorting. The de minimis is a permitted level of trade distorting support excluded from the amber box. Amber box spending is limited by the WTO, while there is no cap for green box subsidies.

\$30 thousand without support and \$23 thousand with the revenue proposal. Revenue insurance would reduce variation and provide a safety net, but would not support or raise net farm income significantly. To raise net farm income, the insurance program could be coupled with an increase in direct payments.

Another alternative is to enact an income insurance program. Compared to the scenario of no government payments, an income insurance program that is fully subsidized by the federal government and covers 70% of average farm income would increase income by \$12 thousand per year for the average North Dakota farm. More importantly, the income variation would be reduced by more than one-fourth. The income insurance increases average income more than the revenue insurance scenario, but direct payments would still be needed to raise income to match current levels.

Table 1 shows the government costs of the various scenarios, which can also be viewed as increases in net farm income due to government payments. Under the current program, the small-, medium-, and large-size farms receive \$20 thousand, \$53 thousand, and \$132 thousand in government support, respectively. Government cost under the 60% reduction scenario amounts to \$8 thousand, \$21 thousand, and \$53 thousand for the small-, medium-, and large-size farms, or \$12 thousand, \$32 thousand, and \$79 thousand less than under the current program. The costs for both the revenue and income insurance scenarios are substantially less than current government payments. Additional direct payments would be needed to raise net farm income. Current farm bill spending, across all the farms in the study, averages about \$38 per acre. Under the 60% reduction scenario, the average is \$19 per acre. The revenue and income insurance scenarios average \$5 and \$7 per acre. If current direct payments are added to the revenue and income insurance programs, the payment would be \$16 and \$18, respectively. To bring incomes back to current levels would require direct payments of \$30 to \$35 per acre.

If the U.S. farm program was converted away from commodity programs and toward an insurance program plus direct payments, all of the subsidies would be classified as green box and therefore not subject to limitations by the WTO. The only major concern would be the budget constraints.

For more details, see forthcoming Ag Policy Brief and Agribusiness & Applied Economics Report 578.

Bioenergy Program

Another important component of the new farm bill could be the development of a bio-energy program. Ethanol can be produced from both corn and cellulosic biomass produced in marginal land, including CRP land. Currently, the United States produces approximately 4 billion gallons of ethanol from 1.6 billion bushels of corn and 75 million gallons of biodiesel from about 55 million bushels of soybeans. The 2005 energy bill requires combined ethanol and biodiesel consumption to total 7.5 billion gallons by 2012, but a much more aggressive policy could be pursued. This policy could include the production of cellulosic ethanol from CRP land. There are 39 million acres of CRP land in the United States, including 3 million acres in North Dakota. If we assume half of this land could be used for ethanol production, over 40 million tons of biomass could be produced per year. This would yield about 3.7 billion gallons of ethanol, nearly doubling the current level of ethanol production. Increased ethanol production could also come from the use of other sources of plant matter on non-CRP land, such as switchgrass, wheat straw, or corn stover, and from increased use of corn.

Table 1. Government Costs Under Various Scenarios, by Farm Size

Scenario	Small	Medium	Large
-----dollars-----			
<i>Government Payments under Current Programs</i>			
Total	19,634 (37)	52,754 (37)	131,825 (40)
Direct	6,441 (12)	15,852 (11)	34,678 (10)
Counter-cyclical	3,941 (7)	9,639 (7)	24,543 (7)
Loan Program	4,983 (9)	23,499 (16)	57,508 (17)
<i>Government Payments under Alternative Scenarios</i>			
60% Reduction under the WTO	7,854 (28)	21,102 (15)	52,730 (16)
Revenue Insurance	1,861 (3)	6,712 (5)	18,023 (5)
Income Insurance	2,951 (7)	9,453 (7)	25,343 (8)

Per acre payments in parentheses.

Ethanol's Impact on the U.S. Corn Industry

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The amount of corn devoted to ethanol has increased steadily from almost nothing prior to the 1980s to about 400 to 500 million bushels per year in the mid 1990s. Since then, ethanol production has increased sharply, consuming 1.4 billion bushels of corn in 2004, which was 12% of the corn crop. Ethanol production has increased over the last five years, from 1.6 billion gallons in 2000 to 3.4 billion gallons in 2004 and an estimated 4 billion gallons in 2005. Production is expected to continue to rise as new plants are continually being constructed. The rapid increase in ethanol production has been driven to a large extent by government policy. A renewable fuels standard in the Energy Security Act of 2005 assures increased ethanol demand for several years in the future. This legislation requires that the combined use of ethanol and biodiesel must equal at least 7.5 billion gallons per year by 2012.

In this study, we evaluate several scenarios dealing with various ethanol production levels, federal subsidies, and energy prices to estimate the impact on corn prices. The base scenario in our analysis does not force ethanol production to the mandated level, but allows it to increase based on current conditions. Scenario 1 (7) analyzes the effects of the renewable fuels standard by forcing ethanol production to the 7 billion gallon level by 2012 (domestically-produced corn-based ethanol will likely account for most of the 7.5 billion mandate, but not all of it). Proponents of ethanol have been pushing for an even more aggressive expansion of the industry than what was mandated under the energy bill. To analyze the impact of a much greater increase in ethanol production, ethanol production is increased to 14 billion gallons by 2012 in scenario 2 (14). Scenarios 3 and 4 examine the impact of gas prices on ethanol production and the corn industry. Scenario 3 (high gasoline price) continues current levels of gasoline prices, while under scenario 4 (low gasoline price), gasoline prices return to levels of 2003 and 2004. Scenario 5 (subsidy loss) estimates the impact on ethanol production and corn price if the federal subsidy for ethanol would end.

Under the base scenario, the amount of corn used for ethanol production increases from 1.4 billion bushels in 2004 to 2.0 billion bushels in 2014. By 2014, the amount of corn used for ethanol would increase to 2.7 billion bushels under scenario 1 (7), 5.3 billion bushels under scenario 2 (14), 2.1 billion bushels under scenario 3 (gas price high), 1.9 billion bushels under scenario 4 (gas price low), and 1.8 billion bushels under scenario 5 (subsidy loss).

Table 2 shows projected corn prices under the various scenarios. From 2004 to 2014, prices increase 8% under the base scenario, 14% under scenario 1 (7), 40% under scenario 2 (14), 8% under scenario 3 (gas price high), 6% under scenario 4 (gas price low), and 3% under scenario 5 (subsidy loss). Compared to the base scenario for 2014, prices are 6% higher with ethanol production at 7 billion gallons and 29% higher with ethanol production at 14 billion gallons. The loss of the ethanol subsidy would reduce corn price by 4%, while changes in gasoline prices have little impact on corn prices.

Forcing corn-based ethanol production to 14 billion gallons would result in a significant decrease in feed use for corn. Feed use declines 39% under this scenario compared to the base, while feed use decreases 8% under scenario 1 (7). However, the increased use of corn for ethanol production will provide substantial

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Table 2. U.S. Corn Price Under Various Scenarios (\$/bu)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Base	2.15	2.12	2.21	2.21	2.24	2.26	2.30	2.33	2.31	2.32	2.32
Scenario 1 (7)	2.15	2.12	2.25	2.23	2.32	2.32	2.44	2.44	2.41	2.47	2.46
Scenario 2 (14)	2.15	2.12	2.35	2.29	2.56	2.50	2.78	2.79	2.87	2.98	3.00
Scenario 3 (High gas price)	2.15	2.12	2.25	2.21	2.29	2.26	2.36	2.35	2.32	2.34	2.33
Scenario 4 (Low gas price)	2.15	2.10	2.21	2.19	2.24	2.23	2.29	2.33	2.28	2.30	2.27
Scenario 5 (Subsidy loss)	2.15	2.10	2.20	2.17	2.24	2.19	2.29	2.32	2.24	2.30	2.22

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by-products for livestock feed. Exports are relatively stable under all scenarios except for scenario 2 (14). This scenario results in a large increase in price, which reduces import demand. Exports fall 13% in this scenario compared to the base scenario.

Under the base scenario, the United States produces 12.0 billion bushels of corn in 2014 with a producer price of \$2.32 per bushel. Gross producer revenue from corn in this scenario is \$28.1 billion. The estimated government payment to producers through various government programs, including counter-cyclical payments, would be \$339 million, increasing total gross revenue to \$28.4 billion. Scenario 1 (7) increases corn price by \$0.14 (6.9%) in 2014, which increases gross producer revenue to \$30 billion. Since no counter-cyclical government payments (\$331 million) are made under this scenario, total gross revenue is \$1.9 billion higher than under the base scenario. Scenario 1 reduces government subsidies by \$339 million. Scenario 2 (14) increases corn production by 425 million bushels and price by \$0.68 per bushel (33.9%). Gross revenue increases by \$9.16 billion from \$28.4 billion to \$37.6 billion. Changes in gasoline prices would have only a small impact on gross revenue as the government subsidies remove most of the price variations.

An Agribusiness & Applied Economics Report based on this research is forthcoming.