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Analysis of Individual Programs Within the 2002 Farm Bill

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The 2002 Farm Bill was designed to replace the emergency funding which occurred in 1998-2001. Its purpose was to implement funding in the case of low prices. The bill was passed during a time of federal budget surpluses, which made funding for the farm bill easier for Congress to accept. Direct payments were retained, under the title of Production Flexibility Contracts (PFC), but at a constant level. The traditional loan program was retained, but payments were made to the producer instead of for government acquisition of the commodities, and a counter-cyclical program was designed to provide additional price protection at the target price level.

Historically, the farm bill has been extremely important to producers in North Dakota. The proportion of government payments to net farm income has increased over time. Because of higher commodity prices, farm payments averaged just 18% of net farm income in the 1970s. By the early 1980s, however, government payments were higher than net farm income. Payment levels averaged 97% of net farm income throughout the decade. Annual payment levels gradually decreased, until they reached 27% of net farm income in 1996, but then increased again in the late 1990s, during which they averaged 65% of net farm income. In 1997, and in 1999 through 2001, government payments were again larger than net farm income in North Dakota. The entire farm sector would have suffered a loss during these years if it were not for the government program. The payment share fell to 50% in 2003 and 48% in 2004, and it has averaged 78% in the early 2000s.

The North Dakota Representative Farm model was used to estimate the impact of individual programs in the 2002 farm bill. The model is a stochastic simulation model designed to analyze the effects of policy changes on farm income. The various programs within the farm bill were separated and examined individually. Direct payments are fixed and do not change when the price level or yield change. The loan program establishes a price floor where producers are paid the difference between market price and loan price, if the loan price is higher, times actual production. The Target Price Program provides counter-cyclical payments when market price is lower than the target price. There are a number of different programs within the Federal Crop Insurance program, but the one modeled in this study is the 70% yield coverage at base Actual Production History (APH) price. Insurance payments are likely to be understated as we assumed that there were no prevented planted acres.

The results for net farm income are shown in Table 1. Under the current farm program, the weighted average net farm income of representative farms is \$92 thousand with a 90% confidence interval of \$70 thousand to \$116 thousand. The 90% confidence interval means that the probability that net farm incomes ranges between these two numbers is 90%. The average farm receives \$22 thousand in counter-cyclical payments with a 90% confidence interval of \$6 thousand to \$36 thousand.

Historically, the loan program was not a direct government payment; instead, a portion of the benefits were paid by the market, since prices would not fall below the loan rate. Recently, cash payments have been made to producers instead of Commodity Credit Corporation (CCC) loans. The average representative farm under the current loan program receives \$47 thousand in benefits with a 90% confidence interval of zero to \$104 thousand. The maximum payment for the loan program extends to over \$500 thousand, which is substantially larger than that for the counter-cyclical program.

The Federal crop insurance program provides benefits similar to the counter-cyclical program. The reported level of this program is probably understated, as there is no prevented planting aspect of the program in the model. It was assumed that all crop acres were planted. Benefits of the insurance program average \$15 thousand for the average representative farm. The 90% confidence interval ranges from zero to \$41 thousand. The standard deviation is \$16,100, which is larger than that for the counter-cyclical program but less than the loan program.

The Direct payment averages \$18 thousand for the average representative farm. Direct payments are higher than Federal crop insurance but less than both the counter-cyclical payments and loan benefits.

Figure 1 shows the distribution of the average net farm income for all farms in the model, with and without the federal farm bill. The average net farm income with the current farm bill is \$92 thousand. Without the farm bill, average net farm income drops to \$5 thousand, with a 90% confidence interval of -\$80 thousand to \$91 thousand. The farm bill raises net farm income in the state, and supports the less profitable farms. With the farm program, the income distribution is narrowed, the long negative tail is removed, and the average income level is increased.

Government programs are essential to North Dakota producers. In many years, government payments are larger than North Dakota net farm income. In recent years, government support has amounted to over 75% of net farm income. Government program payments have been built into agriculture. Costs (both fixed and variable), structure, marketing systems, ownership patterns, and even enterprise choice are affected by government program payments. The farm bill does work, but it is expensive. Any major change in governmental programs would require time to allow agriculture to slowly adapt to those changes or the shock would be dramatic and sharp.

The loan program is the most important subsidy that the government provides to North Dakota producers. The counter-cyclical program provides additional support, but the payment distribution under the program is much smaller, indicating that the loan program provides a larger and stronger safety net. Direct payments do not provide a safety net; they only increase income levels.

Table 1. Results From @Risk Simulation of the Representative Farm Model

	Net Farm Income	Counter-cyclical Payments	Loan Payments	Insurance Payments	Direct Payments
-----thousand \$-----					
Large farm	176 (130-226)	45 (12-76)	64 (0-166)	34 (0-87)	35
Medium farm	78 (61-98)	18 (5-29)	44 (0-95)	12 (0-33)	16
Small farm	34 (29-40)	7 (2-10)	34 (0-60)	3 (0-10)	6
Average farm	92 (70-116)	22 (6-36)	47 (0-104)	15 (0-41)	18

90% Confidence Intervals in Parenthesis

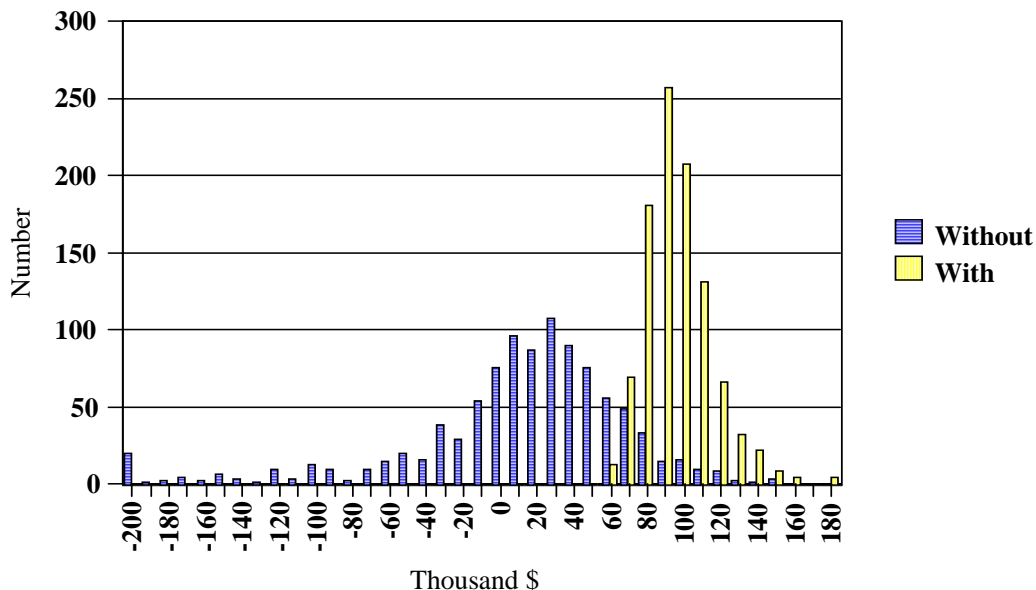


Figure 1. Distribution of Net Farm Income With and Without the Current Farm Bill

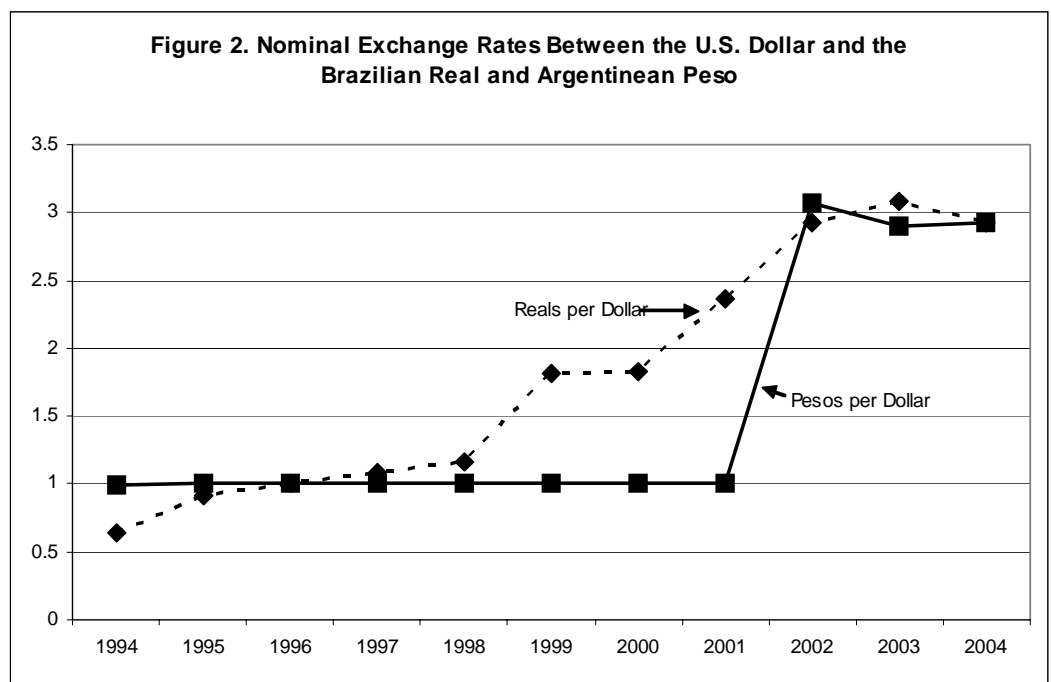
The Impact of Brazil and Argentina's Currency Devaluation on U.S. Soybean Trade

Jose Andino, Kranti Mulik, and Won W. Koo

Soybean exports are a significant contributor to U.S. agricultural export earnings. Although the volume of U.S. soybean exports has increased, the U.S. share in major importing countries is being displaced by exports from competitors, particularly Brazil and Argentina. For example, U.S. market share in China declined from a range of 60-90% in the mid-1990s to about 40% a few years later. U.S. market share in the Netherlands dropped from 80% in 1997 to 20% in 2003, and market share in Thailand fell from around 90% to 40% during the last decade. U.S. market shares have also declined or been stagnant in other major importing countries such as Japan, Korea, Germany, and Spain. On the other hand, U.S. market shares have increased in Mexico and Indonesia.

Soybean production in Brazil and Argentina has increased substantially in recent years, and production in Paraguay and Uruguay has also grown significantly. Brazil and Argentina have benefitted from declining costs of production, marketing, and transportation as a result of political reforms and infrastructure development. Due to significant increases in yields and cultivated area, the potential for future production growth in Brazil is still substantial.

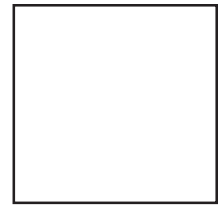
Currency devaluation in Argentina and Brazil may also be an important factor underlying the declining role of U.S. soybeans in world markets. Figure 2 presents nominal exchange rates between the United States and Brazil and Argentina. The decision by Brazil to devalue the real in 1997 and the subsequent devaluation of the peso by Argentina in 2002 have caused a major uproar among U.S. stakeholders. Farmers and exporters have claimed that because Brazil and Argentina decreased the value of their currencies relative to the value of the U.S. dollar, soybeans from the United States are more expensive than their competitors' products.



Results from our analysis indicate that imports of soybeans from the United States have been affected by changes in exchange rates. The estimation provides evidence that a stronger U.S. dollar relative to an importer's currency results in a decrease in imports from the United States. Our results also suggest that depreciation of Brazilian and Argentine currencies, relative to major importers' currencies, decreases soybean imports from the United States. Additionally, increased adoption of GM soybeans in the United States has contributed to the decreased performance of U.S. soybean exports. Finally, it is also expected that increases in total imports by importing countries would increase the volume of soybean sales from all major producers. However, while the United States and other competitors are still increasing export volumes, U.S. exports are not growing at the same rate as Argentine and Brazilian exports. Based on our findings, we conclude that effort needs to be directed to developing strategies that improve the cost advantage position of the United States in producing soybeans or strategies that allow quality differentiation that favors U.S. soybeans over other competitors.

For more details, see *Agribusiness & Applied Economics Report No. 574*.

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Recent Publications

The Impact of Brazil and Argentina's Currency Devaluation on U.S. Soybean Trade, by Jose Andino, Kranti Mulik, and Won W. Koo, Agribusiness & Applied Economics Report No. 574, December 2005.

This report is available on the CAPTS website (www.ag.ndsu.edu/capts), under "Publications," or by contacting Beth Ambrosio, CAPTS Admin. Assistant (beth.ambrosio@ndsu.edu).

Director's Note: The Center is changing its publication policy, starting January 2006. In the future, the CAPTS Agribusiness & Applied Economics Reports will no longer be printed and mailed. Instead, our bi-monthly newsletter will summarize all of the Center's research findings and provide information on how to access the full reports online, where they will still be available to download and print free of charge. In this way, we hope to increase our efficiency in delivering specific research to those individuals who will find it most relevant. Thank you for your continued interest in our research, and we wish you the best in this new year.

Sincerely,

Won W. Koo

Chamber of Commerce Distinguished Professor
and CAPTS Director