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The Devil's in the Details:
Why a Revenue-based Farm Program is No Panacea

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Abstract

Producer and other interest groups are beginning to consider farm policy positions in anticipation of hearings and possible serious farm bill debates during late 2006 and 2007. An idea gaining attention and support among some groups is deemphasizing or eliminating the current commodity "price" programs (loan deficiency payments and counter-cyclical payments) and replacing them with programs based on "revenue insurance" designs. Suggested designs include a multi-tiered farm payment program based on individual revenue guarantees and shortfalls in county revenue. Another example of such an alternative design is a whole-farm revenue design that issues program payments when adjusted gross farm revenue falls below a historical five-year baseline. Interestingly, programs quite similar to both proposals have been offered by USDA's Risk Management Agency (RMA) since 1999 as part of the federal crop insurance program. In this paper, we evaluate the implications of using revenue-based designs as the primary U.S. farm support program. Our analysis considers implementation issues, distributional effects of such a change, and implications for compliance with WTO rules.

Keywords: farm policy, revenue insurance, WTO.

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Keith H. Coble and J. Corey Miller[*]

Introduction

Producer and other interest groups are beginning to consider farm policy positions in anticipation of hearings and possible serious farm bill debates during late 2006 and 2007. Attention to farm policy has also been inspired by the Bush administration's series of farm bill forums, ongoing WTO negotiations, and budget pressure that is forcing Congress to make choices about farm program appropriations.

An idea gaining attention and support among some groups is deemphasizing or eliminating the current commodity "price" programs (loan deficiency payments and counter-cyclical payments) and replacing them with programs based on "revenue insurance" designs. For example, Bruce Babcock and Chad Hart of the Center for Agricultural and Rural Development (CARD) at Iowa State University advocate considering a multi-tiered farm payment program based on individual revenue guarantees and shortfalls in county revenue. Instead of issuing payments when commodity prices fall below a predetermined level, the first tier of payments would be triggered when an individual's revenue from the current year falls below a specified percentage (most likely no higher than 70 percent to meet WTO rules) of the Olympic average of the previous five years. The two remaining tiers of payments would be triggered by shortfalls in the product of price and county yield. Daryll Ray of the University of Tennessee has also noted the serious consideration being given to revenue designs in discussions of the future of farm programs.

Another example of such an alternative design has been provided by the Illinois Farm Bureau Policy Task Force, who state, "We support a transition from the market loan program and the countercyclical program in the farm bill to a safety net program that provides revenue protection for individual producers." This group has expressed interest in the design suggested by Babcock as well as in a whole-farm revenue design that issues program payments when adjusted gross farm revenue falls below a historical baseline (Illinois Farm Bureau b).

Interestingly, programs quite similar to both proposals have been offered by USDA's Risk Management Agency (RMA) since 1999 as part of the federal crop insurance program. RMA currently offers an area revenue insurance design known as the Group Risk Income Plan (GRIP) and a pilot whole-farm revenue plan known as Adjusted Gross Revenue (AGR) insurance is available in a limited set of states. Policy observers are therefore not without some useful experience regarding the mechanics and characteristics of such programs.

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In this paper, we evaluate the implications of using revenue-based designs as the primary U.S. farm support program. Our analysis considers implementation issues, distributional effects of such a change, and implications for compliance with WTO rules.

Why the interest?

While some readers may find proposals for revenue-triggered designs unfamiliar, these ideas were proposed during at least the last two farm bill debates. Most advocates are from the Midwest and argue that separate government programs for price and yield shortfalls afford inefficient risk protection. Furthermore, these advocates argue separate programs can potentially provide relatively little support to some producers who experience significant revenue losses. For example, a producer experiencing a weather-related disaster that reduces yield will also incur a reduction in marketing loan benefits because the market loan program is paid on actual production.

We are not surprised revenue-based proposals typically originate from the Corn Belt. Corn and/or soybean farms in the Midwest experience a much stronger price response to local yield variations than other program crop farms or even corn and soybean farms in other regions. Because of the concentration of corn and soybean production in the Midwest, farmers in this area are acutely aware that markets react to local weather events. In contrast, corn and soybean producers in other regions perceive that a bumper crop or bust in their region will likely not induce a noticeable price response. Heifner and Coble confirmed producer perceptions by finding significant negative correlation between price and farm yield for corn and soybeans in the Midwest, essentially independent yields and prices for corn and soybeans in other regions, and essentially independent yields and prices for wheat and cotton in all regions. Thus, producers of crops where prices and yields are not negatively correlated are more likely to perceive farm programs that protect price risk separately from yield risk as a workable system.

Prior to the 1996 farm bill interest in revenue designs contributed to the impetus to create revenue insurance offered by RMA. In fact, three different individual-level commodity-specific designs were piloted: Crop Revenue Coverage (CRC), the Income Protection Plan (IP), and Revenue Assurance (RA). All three insurance products base their price guarantees on price expectations taken from the futures market and the yield guarantees incorporate producer yields. When the product of harvest-time futures prices and the farm unit yield falls below the trigger, these programs pay out. These products were generally introduced in the Midwest, since demand for these products arose in this area. However, even with some limitations on availability they rapidly captured roughly a 50 percent U.S. market share at the expense of traditional farm-level yield insurance designs.

The three most popular designs discussed above differ from the revenue designs currently receiving attention. For the second- and third-tier payments in their proposal, Babcock and Hart suggest a system that includes coverage along the lines of GRIP. Importantly, the GRIP design does not use farm yields to determine the guarantee; instead, it uses county yields. Area-based designs have been widely discussed as crop insurance mechanisms because disconnecting indemnities from farm yields is believed to reduce

cheating and incentives to inflate losses (Barnett et al.). However, GRIP has not been nearly as popular as the other previously discussed revenue insurance designs. Where offered, GRIP represented only 3.5 percent of revenue insurance acres insured in 2005.

AGR, another insurance design being suggested as a framework for farm policy, aggregates revenue across commodities within the farm. For example, a farm producing three crops and raising cattle would have a guarantee based on historical average revenue for the entire farm and shortfalls would include revenue from all commodities. AGR was implemented by RMA as a means to provide insurance to producers of uninsured crops, but was not envisioned as a replacement for more actuarially-sound crop insurance programs (Risk Management Agency). As implemented by RMA and as suggested by most advocates of the program, AGR uses a farmer's Schedule F Form 1040 as a starting point for calculating revenue. However, because most farms use cash accounting and other complexities, the AGR program requires a number of adjustments to the Schedule F information. Two versions of AGR have been offered by RMA. AGR is the basic program and AGR-Lite is a modified program limited to smaller operations. Participation in these programs has been similar to that of GRIP; for example, in 2005 AGR and AGR-Lite together only captured a 3.53 percent market share in the states where the products were offered.

How might such a program be implemented?

At this early stage of the farm bill debate details are sketchy regarding how revenue-based farm programs would be implemented. The specific programs that would be replaced and how the remaining programs would be integrated remain open questions. These details are particularly complicated since the two primary price support programs and the proposed designs tend to overlap with existing crop insurance programs.

The Illinois Farm Bureau proposal appears to be the most complete AGR-based plan. The most likely scenario is that the revenue "commodity program(s)" would be fully subsidized at some moderate level (perhaps 70 percent coverage) and producers would be allowed to purchase additional buy-up insurance coverage, perhaps with additional subsidies. As noted previously, Babcock and Hart propose a system of multi-tiered revenue-based payments with a base payment of 70 percent individual coverage revenue insurance. The second tier of payments would provide GRIP-style coverage up to 85 percent, and the third tier of payments would include coverage up to 95 percent of the revenue target. However, the third tier of payments would be paid on current decoupled base acres. The revenue guarantee for both the second and third tiers of payments would be based on multiplying expected county yield by target prices similar to the target prices in the 2002 farm bill.

Contemplating these designs as a central component of farm policy should initially involve considering the characteristics of current crop insurance programs. The total premium of the entire 2005 program is valued at approximately $4 billion, of which producers pay about $1.6 billion. Participation rates in the program are now approximately 80 percent for the "big four" crops: corn, soybeans, wheat, and cotton.

The vast majority of farms are insured with basic or optional units that allow producers to divide all acres of a crop in separate units. Both the AGR and the GRIP designs involve aggregation beyond the basic or optional unit level. GRIP aggregates yields across all farms in the county while AGR aggregates revenue across all commodities within the farming operation. Statistically, both of these aggregations tend to reduce risk and thereby lower the value of protection. For example, the average premium rate for GRIP is 77 percent of the individual policy rates in the same county.

On the other hand, while farm income is arguably less variable relative to the average of commodity income, AGR also has the potential to expand government expenditures beyond current commodity programs because AGR subsumes *all* agricultural enterprises. Crops currently supported by farm programs represent approximately 25 percent of total agricultural receipts. This total includes the value of all livestock and the significant value of non-program crops like fruits and vegetables. Thus, an AGR-based program would represent a major redistribution of program benefits. Moreover, given such a potential expansion of beneficiaries, a program based on farm revenue would require relatively low trigger levels to prevent increases in government outlays.

Compliance with WTO

One of the most decisive criteria used to evaluate alternative policies in the next farm bill debate will very likely be compliance with WTO rules. Particularly since the dispute settlement with Brazil over U.S. cotton programs—which ultimately calls into question a number of U.S. commodity programs—policymakers have become acutely aware of current and potential WTO restrictions. A move to revenue-based designs similar to AGR and GRIP raises some new and some well-known questions regarding compliance. Whole-farm income insurance or income safety nets clearly appear to be WTO-compliant when coverage levels do not exceed 70 percent of expectations (Schnepf). However, when revenue designs go beyond this specific form, WTO status is less clear.

Babcock and Hart assume that crop-specific 70 percent coverage revenue insurance will fall into the WTO "green box." However, whether crop-specific programs conform to this criterion is not clear to us, since crop-specific insurance would be whole-farm insurance only in the instances where the farm was engaged in monoculture. Moreover, limiting such a program to current program crops as Babcock and Hart suggest may also be problematic with regard to WTO rules given recent dispute settlement findings involving U.S. programs. In fact, the U.S. has reported current crop insurance subsidies in the amber box classification–even though much of the coverage has been below 70 percent. Another aspect of the program suggested by Babcock and Hart is the use of legislatively-determined price targets rather than the futures market-based price guarantees provided in the current GRIP program. Such targets would likely be criticized for market distortions very similar to those attributed to the current farm program.

We do believe an AGR-style program appears more likely, but is not certain, to fall into the WTO green box classification if the coverage is held below 70 percent because AGR is a whole-farm program. Some observers assert an AGR-style program would be similar

to the safety net provided by the Canadian Agricultural Income Stabilization Program (CAIS). CAIS is based on whole farm net revenue like its predecessor, the Net Income Stabilization Accounts (NISA). Both programs represent forms of subsidized savings programs. The NISA program matched producer contributions to savings accounts, which provided funds for withdrawal in low income years (Coble). CAIS matches withdrawals with relatively greater government contributions in low revenue years. Thus, Washington, DC-area trade consultant Paul Drazek argues that low prices or yields indirectly lead to greater subsidization and will keep such programs in the amber box (Illinois Farm Bureau c).

Potential Implementation Challenges

The title of this article stems from our familiarity with the GRIP and AGR insurance designs. The GRIP program's payment mechanism is based on the availability of long time series of county yields and readily available futures prices for price discovery. The use of county yields rather than farm yields avoids cheating and moral hazard, but does so by also diminishing the correlation of actual losses from a producer's actual yield losses. Using more aggregate yields such as a state yield increases this form of basis risk. Historical county data are widely available for program crops in major producing counties. However, for some regions and crops historical data are lacking, which constrains the availability of the GRIP program. Similarly, GRIP uses futures markets for price discovery. If this provision were maintained, some program crops would lack the necessary futures data. Thus, how this program would be extended to all producers of existing farm program crops is not clear.

A program providing whole-farm revenue protection would face many of the same issues encountered by RMA when commissioned to implement AGR. A logical starting point for such a design would appear to be the variation of farm income producers report on their Form 1040 Schedule F. RMA in fact uses this information, but must address a number of issues associated with the Schedule F values. The most obvious issue is that the IRS allows farmers to use cash accounting, which does not necessarily conform to an accurate measure of farm revenue in a particular year. Thus, the additional information RMA requires from producers to approximate generally accepted accounting methods to measure annual revenue is generally viewed as justified.

To provide a guarantee to a producer, RMA needs a baseline of expected farm revenues. AGR generally uses a five-year base period and the Illinois Farm Bureau Policy Task Force has suggested the same be used for a new whole-farm program. However, RMA has wrestled with what to do when a five-year average provides a poor estimate of the next year's revenue. For example, farm expansion (or contraction) often occurs in discrete jumps such as when additional land is purchased or an enterprise is shut down. As a result RMA created a lengthy set of rules to deal with producers being seriously over- or underinsured. A related issue that has proven difficult to implement is defining which activities the farmer is engaged in that are production agriculture and which are non-agricultural activities. For example, when fruit growers process their crop, is the process of canning fruit agricultural production or a non-agricultural enterprise? RMA

has had to promulgate a number of rules in an attempt to address these issues, which implies that administering the program is not as easy as many observers believe.

The AGR program has also required the development of quite complex rules regarding the measurement and validation of a loss when producers have a claim. The current farm programs are triggered by readily observable prices not under the control of producers. Traditional yield insurance requires a field check and other evidence of physical crop loss to validate a yield insurance claim. However, AGR revenue measurement subsumes all production and prices in which the farm is engaged. By the time the Schedule F is calculated the cause of loss may have occurred months earlier and be very difficult if not impossible to verify. Thus, to avoid fraud and abuse insurance adjusters must essentially become forensic accountants. This process is difficult and time-consuming for both the loss adjuster and the producer making a claim. AGR rating is also complex because the policy subsumes all the random prices and yields on the farm. Because each farm has its own mix of enterprises, rates need to reflect all the complex risk relationships for that particular farm. Thus, rating the AGR product is much more statistically difficult than any crop-specific insurance. Ultimately, policymakers interested in the AGR concept must recognize that AGR will likely be susceptible to fraud and abuse that can be mitigated only by much more paperwork than current programs require.

Distinguishing an AGR–style program from the current crop insurance program is also quite difficult, as Bruce Babcock suggests a free AGR program with an 80 percent coverage level would likely do away with the current crop insurance program (Illinois Farm Bureau a). The current AGR program allows some crops to be insured separately with other insurance, but measuring the effects of separate policies on rates and duplication of coverage also creates complexity and actuarial challenges.

Distributional Effects

Ultimately, moving to a revenue-based farm program would create enormous redistributions of government farm program benefits. As already noted, AGR could spread farm program benefits away from current recipients to a much broader set of producers including livestock, fruit, and vegetable growers. Distributions of benefits are also a consideration in the proposal by Babcock and Hart, as they limit their design to the current slate of program crops. Policymakers should also recognize that current programs, with payments triggered by low commodity prices, provide fairly uniform benefits as measured on a per unit production basis. Price risk is relatively uniform across regions of the country and across commodities. For example, the relative price variability of corn, wheat, and cotton are very similar. However, county-level revenue is often dominated by yield risk which in fact varies enormously across regions. Thus, just as in the current crop insurance program, a particular level of coverage (such as 70 percent) is much more valuable in some regions than in others.

Differences in the value of a particular level of coverage across regions are illustrated in figure 1. The most widely available crop revenue insurance program is Crop Revenue Coverage (CRC). Rates for this product are driven by commodity-specific yield and

price risk as they would be for a GRIP-style program. We computed the average premium rate for 75 percent CRC corn coverage by state and then calculated the ratio of the average rate in a number of states to the average 75 percent coverage CRC corn rate in Iowa. Not surprisingly, the value of the revenue coverage in higher yield risk regions is three times or more than the value in Iowa. This suggests that a revenue-based plan will provide the greatest per unit subsidy where the greatest revenue risk is located, which is generally where yield risk is the greatest.

The heterogeneity of benefits would apparently be even greater with an AGR-style program, as riskier regions would gain relatively more and farm diversification—a major farm risk management strategy—would be discouraged. Free AGR-style protection at a base coverage level would clearly offer the greatest benefits to undiversified farms.

Conclusions

The next farm bill debate will encompass many issues such as budget constraints and WTO pressures for farm policy reform. Revenue-based programs have been part of the preliminary discussions and appear to be particularly attractive in the Midwest. However, interest groups and policymakers should recognize making such programs a central component of U.S. farm policy would have wide-ranging implications. While a revenue program could likely be made WTO-compliant if held to a 70 percent coverage level, this essentially replicates the coverage currently available through the crop insurance program. Furthermore, such a program appears to not achieve a Congressionally-acceptable level of protection.

Revenue–based programs would create a host of implementation issues. A GRIP-style program using futures price data and county yield data would face the challenge of finding the necessary price and historical yield data when it does not exist for many crops and locations.

An AGR-style program appears to be a more radical proposition and also quite difficult to implement. Building U.S. farm policy around a program basically created to serve farmers in marginal regions who produce crops not insured by RMA would be a heroic leap. Because the AGR program is based on farm-level revenue history it is potentially subject to complexity in accurately defining the farm's guarantee and the actual revenue in a loss year. The RMA experience clearly suggests such a program cannot be simple to administrate as numerous adjustments must be made to the farmer's income tax data. Furthermore, whether these efforts are sufficient to avoid significant fraud and abuse in the long run is not yet clear. However, AGR would definitely redistribute farm program benefits away from the current subsidized commodities to the other 75 percent of farm value. Policy makers should consider these and other issues as they contemplate a potential revenue-based farm safety net in the U.S.

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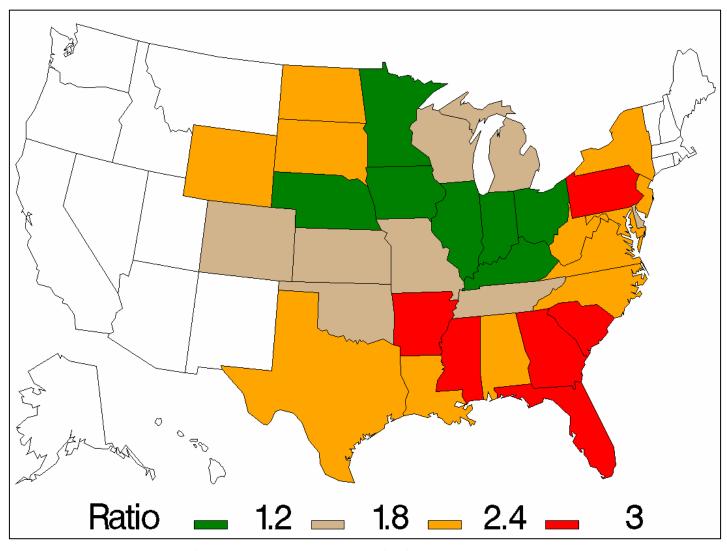
Figure 1. Ratio of mean 75% coverage corn CRC rates to mean 75% coverage Iowa corn CRC rates.