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Farm revenue insurance has public appeal as a potential means to reduce annual variation in farm income while also reducing the cost of commodity programs. For some time, economists have been attracted to the idea of farm revenue insurance as a policy instrument addressing farm economic instability. Public enthusiasm for the idea intensified after endorsement by the Iowa 1995 Farm Bill Study Team. The broad appeal of the proposal was apparent: it had the support of 11 organizations ranging in philosophy from the Iowa Farm Bureau to the National Farmers Organization.

This paper lists advantages and disadvantages of revenue insurance. Preliminary empirical analysis suggests how that program may affect farm income associated with various crops and regions. We conclude with a proposal to make revenue insurance workable as an income insurance program administered through the federal income tax.

Iowa Revenue Assurance Proposal

Features

The 1995 Iowa Farm Bill Study Team's revenue assurance (RA) proposal contains the following features:

- The program replaces deficiency payments, Federal Crop Insurance (FCI), and ad hoc disaster programs.
- The Commodity Credit Corporation (CCC) nonrecourse loan program and farmer owned reserve (FOR) would continue to function as under current legislation.
- The program covers crops but not livestock. An early draft called for coverage of all crops, but a recent proposal calls for coverage only of grains (except rice) and major oilseeds.
- No crop acreage reduction programs (ARPs) are used, although some form of the Conservation Reserve Program might be retained. Each producer is free to plant any crop in any amount.
- Over time each producer proves a yield for each crop grown on that farm.
- Each producer is assured of at least 70% of their normal crop revenue based on a five-year past average.

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- Taxpayers would finance the base 70% revenue protection, but producers would have the option of purchasing a higher level of protection.
- Revenue assurance payments would not be subject to limits by size.

Unanswered Questions

The Iowa proposal leaves several questions unanswered:

- How would yields be established for each crop while a yield history is being proved?
- How are program prices and acreages established?
- Would producers who feed their crops to livestock be treated the same as producers who market their crops for cash?
- How, if at all, would revenue history be adjusted for production arising from changes in double cropping, irrigation, rotations, drainage, or other cultural practices? Such changes could materially affect payments.
- How would revenue history be established for beginning or expanding operators?
- Would participants in the revenue assurance program be required to follow prescribed environmental practices? What would happen to CRP, conservation compliance, swampbuster, and sodbuster programs?
- Would all crops be covered, including annual pasture and forage crops, fruits, vegetables, peanuts, tobacco, sugar, and cotton?
- Would revenue guarantees apply to each crop individually or to the combined revenue from all crops?
- How would the farm nonrecourse loan rate be established to avoid excessive stock accumulation without supply control?
- What would be the cost of the program to taxpayers?

Revenue Assurance Outcomes

To better understand implications of revenue assurance, we calculated the level and variability of farm revenue for the U.S. as a whole from 1980 to 1992 using a five-year, 90% revenue assurance program instead of current commodity programs. A government assurance payment makes up the difference between current market revenue and 90% of the past five-year moving average of market revenue per acre.

Implications of coverage at the 70% level proposed by the Iowa team could not be estimated from U.S. aggregate price, yield, acreage, and revenue data used herein because too much farm by farm variability averages out at the national level. Results in this paper underestimate actual costs of the assumed 90% coverage (though not necessarily of 70% coverage), and need to be supplemented by site-specific numbers. The numbers in this paper are relative aggregate indexes of impacts among commodities. If individual farm variation is proportional to national variation among farms, the results are a useful supplement to site-specific numbers which are difficult to aggregate.

Estimates assume that any increase in output from less acreage reduction is offset by less incentive to produce under revenue assurance, so farm output is not changed. To avoid

moral hazard of insuring "neglected" or prevented planting, revenue is assured per acre. This is equivalent to calculating outcomes for a fixed acreage. This simplification recognizes that acreage needs to change considerably from year to year in response to markets, and it is inappropriate for revenue insurance to protect against such changes.

Results of this revenue assurance program are shown in Table 1 as a percent of actual outcomes under existing commodity programs for that period. Overall revenue (value of production) and government payments under the revenue guarantee averaged 86% of that from existing programs for the five commodities. Revenue under revenue assurance compared to actual commodity programs ranged from 70% for rice to 103% for soybeans. Outcomes also were calculated insuring value of total production rather than value of yield. As expected, revenue plus payments average higher—112% for soybeans, for example, compared to 103% in Table 1.

Greater stability of revenue might compensate farmers for lower gross revenue. For the five crops, instability of market revenue plus government benefits under revenue assurance averaged only 45% of that under actual programs from 1980 to 1992 (Table 1). Revenue assurance achieved relatively less stabilization for soybeans than for other crops.

By emphasizing income stabilization rather than enhancement, the revenue assurance program potentially saves taxpayers' dollars. Payments to producers under the revenue assurance could average as low as one-quarter of those from deficiency, diversion, disaster, storage, and net nonrecourse loans during the 1980-1982 period for the five crops considered (right column, Table 1). However, revenue assurance benefits would be distributed quite differently than current commodity program benefits. Soybeans is the big gainer based on the ratio of assurance payments to past payments. Soybean payments rise sharply because they began from a small base under the past program. Cotton payments especially drop because payments were sizable under past programs and because cotton yields are stabilized to some degree by irrigation.

RA payments as a proportion of payments under past programs averaged 30% for wheat compared to 14% for corn. The proportion is larger for wheat because of greater variability in wheat revenue per acre rather than because actual wheat payments were low in the 1980-92 period.

The following numbers provide additional insight into crops covered by revenue assurance:

	<u>Payment per Acre</u> (\$/acre)	<u>Payment/Receipts</u> (Percent)
Corn	9.62	3.7
Wheat	6.26	5.3
Soybeans	3.92	2.1
Cotton	6.04	1.7
Rice	38.67	9.7

Table 1. Performance of a Five-Year, 90% Guarantee Revenue Assurance Program Relative to Actual Farm Programs for Selected Commodities from 1980 to 1992

Commodity	Revenue plus Government Payments per Acre ^a		Government Payments ^a
	Average	Variation (Standard Deviation)	
	----- (Percent of Actual) -----		
Corn	82	39	14
Wheat	82	48	30
Soybeans	103	73	large
Cotton	78	40	11
Rice	<u>70</u>	<u>37</u>	<u>27</u>
Five Crops	86	45	24

Source: Basic data from U.S. Department of Agriculture.

^aIncludes deficiency, diversion, disaster, storage, and net loan payments per acre under actual programs, but only assurance payments under the revenue guarantee.

Although the right-hand column of Table 1 indicated soybeans especially gained under revenue assurance versus past programs, the above numbers show that revenue assurance payments per acre and per dollar (percent) of receipts are greatest for rice. Wheat also receives considerable revenue payments compared to receipts. In short, of the major crops, wheat would be relatively favored by revenue assurance because of its variability and soybeans would be favored because it would be placed on an equal basis with other crops for program benefits.

Revenue payments would be greatest in high risk areas, shifting benefits to drought-prone regions such as the Great Plains, frost-prone areas of the North, and disease- and insect-prone areas such as the humid Southeast. Another reason for less average payment per unit of revenue in major producing areas is that bad weather causing low yields there has a strong macroeconomic impact on markets, raising prices and preserving revenue. The shifting of benefits to high risk areas would change the balance of political interests supporting programs and could threaten political viability of transfers to agriculture.

Advantages of Revenue Assurance

Although many questions remain unanswered, we attempt to summarize possible advantages and disadvantages of revenue assurance. In its favor, revenue assurance:

- *Recognizes that unstable income is a greater economic problem than is chronic low income to many commercial farm families.*
- *Combines deficiency payments, FCI, and ad hoc disaster assistance into one program,*

thereby diminishing chances for individual programs to work at cross purposes in stabilizing revenue. Treasury costs can be cut from current levels while reducing variation in farm income.

- *Recognizes that economic security of farmers depends on income stability, and not on price stability alone or output stability alone.* RA recognizes that higher prices can go with lower production so that income is not necessarily changed by price and quantity instability. Programs independently insuring only price or only output can destabilize farm revenue.

- *Removes supply control programs that reduce production, limit agribusiness activity and exports, and inflate food prices.*

- *Lets supply and demand set prices in the market* (if nonrecourse loan rates are low enough), thereby enhancing global competitiveness while diminishing government central planning.

Disadvantages of Revenue Assurance

Among shortcomings, revenue assurance:

- *Would reduce overall farm revenue including payments compared to existing programs.* Although benefits to farmers from less risk may not offset farm well-being loss from lower income and land price, taxpayers would gain from lower program costs. Revenue assurance might be viewed as a transition program to a greater market orientation.

- *Would provide incentive to widen variation in farm revenue.* Greater assurance subsidies are received for variable income than for a stable income. Farmers would have incentive to use more risky production methods and other means to make their revenue vary from year to year. Such activity is a form of moral hazard sacrificing economic efficiency, real national income, and food security over the long term.

- *Would not necessarily address problems of unstable net farm household income.* RA essentially would support accrual income rather than cash income. The difference arises mostly from changes in inventories. RA might discourage use of inventories to stabilize food marketings—at a loss in food security to consumers. Because net cash income must support current production costs, debt service, and essential family living expenses, many farmers might wish to have net cash income rather than accrual income stabilized.

- *Would expand output, thereby depressing prices and reducing average gross revenue.* Of course, any farm policy reform phasing out ARPs would expand farm output. But compared to no government support of farm prices or incomes, revenue insurance would go beyond removing ARPs to subsidize production. Output would expand because economic incentives to produce would be enhanced by RA. Consequently, price and market revenue would fall. Output would expand among favored crops and in marginal areas, causing economic inefficiency and degrading the environment.

- *Would violate the spirit if not the letter of the General Agreement on Tariffs and Trade (GATT).* GATT principles call for subsidies to be tied to historic rather than current production. Subsidies expanding output are to be attended by production controls. Subsidies are not to be used to expand export market share. RA violates these strictures. This and the preceding criticism would not apply if farmers themselves finance revenue insurance.

- *Would not address revenue cycles.* If RA is based on a five-year moving average of yields and prices, a cycle trough of five poor years would leave next year's revenue little protected. On the other hand, a revenue cycle peak of five unusually good years would form a history bringing insurance payments in the next normal year. A longer base for payments would not necessarily eliminate this problem. A moving average of, say, 10 years characterized by rapid inflation or technological changes would leave historic yield and price averages out of touch with current circumstances.

- *Would encourage farm consolidation and hence the trend to fewer, larger farms.* Risk on small farms is dampened by off-farm income, but risk is a barrier to expansion of commercial farms. Less risk and elimination of payment limits encourages expansion of farms. Less risk also may encourage purchase of farm assets by nonfarmers.

- *Would tend to displace rather than build on current private risk management tools such as futures, options, and hail insurance.* A widely held policy principle is that government should not do what the private market can do.

- *Can be complex to administer, especially if insuring many commodities with separate coverage for each commodity.* Revenue assurance covering one commodity would be easier to administer but would not stabilize overall farm income. Base production would need to be established for each commodity covered, including livestock, in a complete system. Determining revenue from each commodity would be an administrative burden and bedeviled by moral hazard.

- *Would reject the experience of Canada where some provinces using gross revenue insurance are dropping it.*

Canadian Experience

Several provinces in Canada have offered a revenue insurance program called the Gross Revenue Insurance Plan (GRIP) since 1991 (see Simone in Harwood, p. 28). It is jointly funded by producers, provincial governments, and the federal government. It covers grains, oilseeds, and some specialty crops.

Provisions differ among provinces. Some set coverage according to individual producer's yield; others set coverage according to area yield. Among provinces, insurance coverage ranges from 70% to 90% of long-term average revenue.

Saskatchewan and Manitoba plan to abandon GRIP because of high cost and producer dissatisfaction. Canada is looking for a "whole farm" program that is less costly, GATT-legal, production neutral, and that includes livestock and processing as well as crops. One proposal is a *net* income stabilization account (NISA) operating through individual, interest-bearing funds jointly financed by producers and government. Payments from good years are drawn from accounts triggered by farm net income falling below a 5-year moving average or falling below a specified minimum income.

Possible Options to Improve Revenue Insurance

The Canadian and other experiences suggests several options to improve farm revenue insurance schemes:

- To reduce taxpayer cost, overproduction incentives, and export dumping, emphasize revenue *insurance* paid at least in part by producers rather than revenue *assurance* paid by government.

- Replace individual crop revenue assurance with insurance to cover whole farm or family production expenses, total farm revenue, net income from farming, or net farm family income from *all* sources. The most basic need on most farms is to insure net income and not crop revenue.

This latter option has the advantage of being operational off income tax returns, thereby vastly simplifying administration and reducing administrative cost. It could recognize that farm family economic security depends jointly on expenses, income from the farm, and income from off the farm.

The program has a precedent in the Earned Income Credit (EIC) now available from the Internal Revenue Service to those with low earnings. The government supplements income of those who earn up to \$23,050 per year. The EIC maximum payment, approximately \$2,400 per year, is too small to stabilize income of farmers. The program, now designed to supplement income of the working poor, would need major revision to stabilize income of commercial agriculture. However, the design and administration of an income stabilization program from income tax data would be far simpler than doing so from individual crop and livestock enterprise data.

One issue is whether an income stabilization program under an augmented EIC could be made available to farmers alone. If politics dictates that it be available to all occupations, high budget exposure could dictate heavy cost-sharing with participants voluntarily contributing to the fund in favorable years (with some matching by government to provide incentives), and drawing from the fund in lean years according to prescribed procedures. Cost-sharing also would reduce abuse of participants churning accounts to obtain maximum subsidies from turnover. The degree of cost-sharing by government might range from, say, 30% for families with low average income to 2% for families with high average income. Accounts would earn interest, could help to finance the national debt, and could be used for retirement income as well as annual insurance.

Conclusions

Revenue insurance may seem to have the force of an idea whose time has come. But the Iowa and related revenue assurance proposals lose much of their appeal when closely scrutinized. Agricultural groups providing the political base for current commodity programs will be reluctant to abandon the comfortable policies of the past for complex revenue insurance schemes shifting the geographic and commodity incidence of benefits. Perhaps the most telling criticism is that revenue insurance has not worked well elsewhere.

To overcome many of the pitfalls of revenue insurance for individual crops, we propose a net income insurance plan designed around the federal income tax. That plan offers comprehensiveness and administrative simplicity. The earned income credit now supplementing earnings of the poor would need to be expanded, with participants voluntarily paying into a fund in favorable net income years (with some matching by government) and receiving paybacks in unfavorable years when income falls below a moving average or a threshold level.

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