

*Crop insurance reform has become a good idea gone awry.*

# The Bad Harvest

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**I**N THE PAST FEW DECADES, MANY AGRICULTURE policy analysts have argued that partially subsidized crop insurance would be a more efficient and equitable way to protect farmers from disaster than ad hoc disaster aid. These arguments produced major crop insurance legislation in 1980 and 1994, as well as significant reforms in several farm bills over the past twenty years. Despite the high expectations and grand promises of these crop insurance reform efforts, it is unlikely that the benefits to the nation have exceeded the taxpayer cost. What is more, last year's latest round of crop insurance reform, which is intended to increase farmer participation, will likely not prevent more ad hoc disaster payments in the future.

Policy advocates who prefer the efficiency of markets over government aid are philosophically attracted to the idea of crop insurance. This is because a properly designed crop insurance program spreads out risk while requiring farmers who are exposed to risk to pay for the coverage.

But the current crop insurance program is expensive, complex, and inefficient. It encourages farming practices that increase the likelihood and extent of losses. Benefits from the program are bid into land prices, creating barriers to entry for young farmers. The subsidy structure for farmers also favors the highest risk farmers in the highest risk regions. And the subsidies have had unintended and perverse consequences on insurance company behavior. The process has been captured by a set of stakeholders who have helped compound the scope, costs, and inefficiency of what at one time was a good idea. This leaves us to ask, has the current crop insurance program become so heavily subsidized that it is even more inefficient and inequitable than ad hoc disaster assistance?

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## THE ILLUSIVE PROMISE OF CROP INSURANCE

INTEREST GROUPS AND ANALYSTS HAVE LONG ARGUED that crop insurance was more efficient and equitable than ad hoc disaster aid. In 1980, the General Accounting Office (GAO) released a report that typified this argument. According to the report, "GAO believes disaster assistance policy should be based on economic welfare considerations of equity and resource allocation efficiency."

According to the arguments favoring expanded crop insurance, such insurance would be:

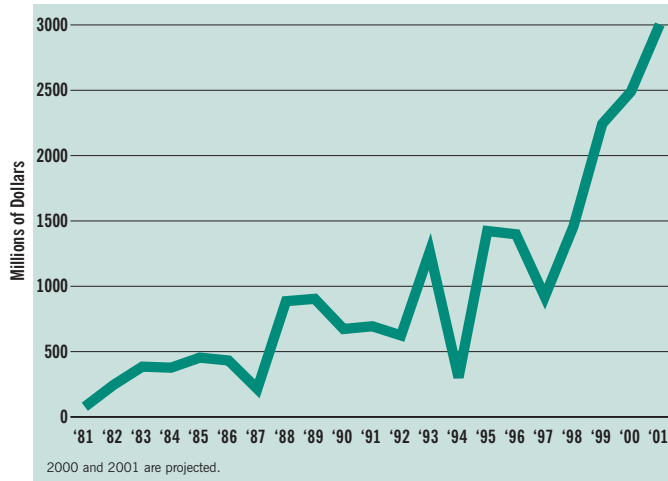
- less expensive than free disaster aid;
- more equitable than free disaster aid;
- less likely to create incentives to encourage farming practices that increase the likelihood and extent of losses; and
- more consistently available over time, which would allow for long-range planning.

Members of Congress have consistently argued that free ad hoc disaster aid would be unnecessary if only more farmers would purchase crop insurance. To that end, the Crop Insurance Reform Act of 1994 redirected about \$1 billion annually away from ad hoc disaster aid, and instead used that money to subsidize a catastrophe crop insurance policy (CAT). CAT policies offer free insurance (farmers pay only a nominal fee for administrative costs) at 50 percent of the average yield and 60 percent of the average price.

Under the act, farmers had to sign up for CAT coverage if they wanted to remain eligible for other government benefits such as price and income support payments. Policymakers saw mandatory coverage as an essential component of the 1994 reforms; without broad coverage, participation levels would not be sufficiently high enough to obviate the need for ad hoc assistance. In 1995, the first year following the reforms, participation rose to 85 percent of eligible acreage. However, that increase was short-lived; Congress dropped the mandatory participation requirement after the first year because of discontent by many farmers who concluded that

Figure 1

**TAXPAYER COST: Federal Expenditures for Crop Insurance**



they received very little value from these policies. Participation in CAT has declined precipitously since 1995.

Despite the enactment of the reform legislation in 1994, Congress again passed ad hoc disaster legislation in 1998, 1999, and 2000. These relief efforts have produced more calls for expanding crop insurance programs.

In late 1999, Congress used part of the budget surplus to set aside an additional \$6 billion for federal crop insurance reform. During the nearly two years of debate over reform in the current Congress, lawmakers provided special appropriations for added farmer subsidies in crop years 1999 and 2000. The debate was intense and complex, and the prevailing argument was, once again, for the federal government to increase subsidies for crop insurance. Policymakers believed that the increased subsidies would prompt more farmers to buy the policies, thus alleviating the need for future ad hoc disaster aid.

Prior to the 1994 reform, the taxpayer cost of crop insurance was about \$700 million. The 1994 act increased the

cost to \$1.7 billion. The new 2000 legislation increases the cost to over \$3 billion. Figure 1 shows this trend in taxpayer cost.

Even as taxpayer money went to support this insurance program, the federal government continued to spend on ad hoc disaster aid for crop losses. Between 1988 and 1999, this aid has averaged over \$1 billion per year. If the \$1.6 billion expenditure for the 2000 crop year is included, the average disaster aid since the 1994 Crop Insurance Reform Act is far above \$1 billion per year.

The cost to taxpayers for this crop insurance has increased significantly since the earliest effort to expand crop insurance in 1980. Table 1 shows how the subsidy rates have changed for the basic farm level crop insurance product under the three crop insurance reform acts. While the rate of subsidy has increased for every coverage level, the increases for the highest coverage levels are most dramatic. These subsidies have more than doubled for all coverage levels above 75 percent.

The continual increase in subsidies, particularly at the higher coverage levels, has boosted participation at the so-called buy-up level (coverage higher than 50 percent). As recently as 1998, farmers had insured less than half of the eligible acreage at this level. But between 1998 and 2000, the amount of farmland insured at the buy-up level increased by roughly 30 percent, from 120 million acres to 157 million. This increase followed a federal increase in the insurance subsidy of more than 70 percent, from \$1.5 billion to nearly \$2.5 billion annually. This translates into a taxpayer expenditure of over \$27 for each acre insured.

Because the subsidies under the 2000 reforms are comparable in level to the additional subsidies paid in 1999 and 2000, it is unlikely that participation will grow much beyond the 1999 and 2000 levels of about 73 percent of eligible acres (including the low level CAT insurance). Because of this, Congress will likely decide to pay out ad hoc disaster relief in the future.

How can more than 25 percent of the acres go uninsured when subsidies are so high? The frequency distribution of crop losses is skewed rather than normal, and farmers have good knowledge about the probability of their own losses. Even with subsidies at relatively high levels, some farmers are unlikely to get the money back that they put into premiums for coverage above the 50 percent level. These farmers know this. Meanwhile, those farmers whose yields are at greatest risk know who they are, and they expect to get back far more than they put into premiums.

Table 1

**IMPROVING THE DEAL: Subsidies of Premium for Full Price Reimbursement Coverage**

Coverage as % of Yield	Subsidy as Percent of Premium		
	1980 Act	1994 Act	2000 Act
50	30	55.0	67
55	Not Sold	46.1	64
60	Not Sold	37.8	64
65	30	41.7	59
70	Not Sold	31.9	59
75	17	23.5	55
80	Not Sold	17.3	48
85	Not Sold	13.0	38

**THE EFFECTS OF CROP INSURANCE SUBSIDIES**

INSURING FARM YIELDS FOR MULTIPLE RISK IS COMPLEX. Farmers always know more about their yield potential and yield risk than either the government or any insurance company. Insurance companies require farmers to supply between four and 10 years of yield records to establish the Actual Production History (APH) that serves as the basis for their yield guarantee. This yield serves as the primary underwriting mechanism; premium rate discounts are a function of the APH measure. Insurance representatives generally set the rates by county and crop; this means that farmers with

**DISASTER RELIEF:** U.S. Senators Robert Byrd (second from left) and Jay Rockefeller (far right) join agriculture officials in surveying a drought-stricken West Virginia cornfield.



DENNIS GRUNDMAN

APH yields above the county average will typically receive lower premium rates.

Once a farmer has established an APH yield, he can obtain several different coverage levels. Coverage levels range from 50 percent of the APH to 85 percent. For example, if a farmer has an APH of 100 bushels and selects 65-percent coverage, crop insurance payments will begin any time the realized yield drops below 65 bushels. Payments are made for each bushel below that level.

**PREMIUMS AND BENEFITS**

TO ILLUSTRATE THE RELATIONSHIP BETWEEN PREMIUMS and benefits from crop insurance, I examined data from

*Table 2*

**WINNERS AND LOSERS: Distribution of 10-Year Loss Ratios for Iowa Corn Farms Buying 65 Percent Coverage**

Return per \$1 of premium	No Subsidy	1980 Act (30% subsidy)	1994 Act (42% subsidy)	2000 Act (59% subsidy)
Less than \$1	59%	43%	37%	29%
More than \$2	10%	24%	34%	51%
More than \$3	2%	9%	15%	31%
More than \$4	1%	3%	6%	17%
More than \$5		1%	3%	9%
More than \$6			2%	5%
More than \$7				3%

This table does not include the added subsidy in 1998 and 1999 that came from special appropriations.

17,557 Iowa corn farms that purchased crop insurance between the years of 1982 and 1994. I only considered the farms with 10 years of farm yields, and I established the hypothetical crop insurance rates for each farm using the standard government rating procedures. Farms were pooled and rated so that each county would be actuarially sound — premiums would equal indemnities paid.

As Table 2 shows, 59 percent of the Iowa farms I examined would receive less than a dollar back for every dollar they used to purchase crop insurance. Around 10 percent would receive more than \$2 for every \$1 of premium. Nearly 15 percent of the farm yields would never have triggered a payment for 65-percent coverage during the 10 years that I examined.

More farms experience a loss ratio of less than \$1 than we might expect over a 10-year period. Even more telling, the introduction of a 59-percent subsidy does not cause all of the farms to make money on crop insurance. Some 29 percent of the farms in this sample that had crop insurance still would have paid more than they received during the 10-year period. Because the data do not include nearly half the corn acreage in Iowa (because it was not insured during this period), one would expect that the entire population of farms in Iowa would have an even larger percentage of farms that would not receive benefits greater than premiums.

Still, because of the premium subsidy, it appears that a large majority of farms will receive more in indemnities over time than what they pay in premiums. With the new subsidy of 59 percent, more than half of the sample in Table 2 would have received more than \$2 for every \$1 of premium paid. Nearly a third would have received more than \$3 for



every \$1 of premium during the study period, 17 percent would get back \$4 or more for every \$1, and nine percent would receive \$5 or more for every \$1.

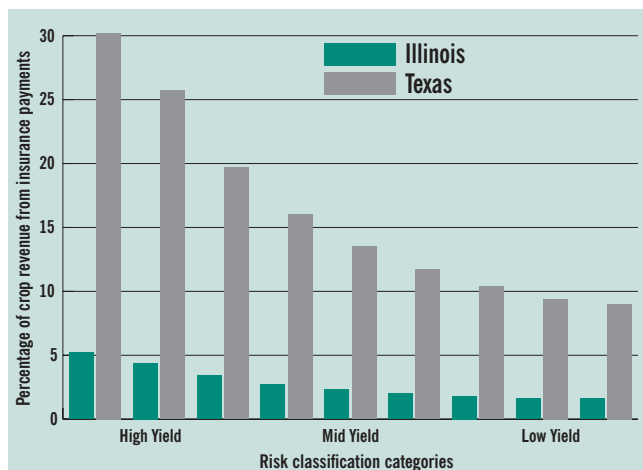
Two critical results emerge from the Iowa data. First, increasing the subsidy worsens — rather than improves — actuarial soundness. This is because the percentage of farmers who get back more than double their premiums increases more than the percent of farmers who get back less than their premiums. For example, a change from zero-percent subsidy to 42-percent subsidy reduces net 10-year losers from 59 percent to 37 percent — a reduction of 22 percentage points. However, the same change produces a 24-percentage point increase in farmers who receive more than double their premiums. Second, many low-risk farmers who currently purchase crop insurance are paying more in premiums than they receive in benefits, even over a 10-year time period and even with extensive subsidies.

Skewed results by themselves are not the problem; after all, only a small minority of people ever makes fire insurance claims. But farmers know more about their own probability of crop loss than homeowners do about the probability of fire loss.

Other studies confirm the skewed nature of crop insurance losses. In a 1992 report that I authored along with Joe W. Glauber and Joy L. Harwood, we found that, between 1983 and 1990, 1.4 percent of the soybean policies collected 41.3 percent of excess losses, 2.2 percent of wheat policies collected 19.5 percent of excess losses, 1.5 percent of cotton policies collected 23.2 percent of excess losses, and 1.8 percent of grain sorghum contracts collected 28.5 percent of excess losses. The results were a product of serious adverse selection and moral hazard during this time period. Rating reforms instituted in the early 1990s have reduced such abuse, but the unbalanced nature of the benefits remains. Adding subsidies may bring lower-risk farmers into the risk pool, but the costs of higher-risk farmers will rise even faster.

Figure 2

### TAKING ADVANTAGE: Texas Farmers Gain a Significant Portion of Their Revenue From Insurance Payments



### IMPLICATIONS OF SUBSIDY STRUCTURE

THE CURRENT SUBSIDY STRUCTURE FAVORS THE higher-risk farmer. Unsubsidized premium rates increase as relative risks increase, so setting subsidies as a percentage of premium rates means that those with higher relative risk can expect to receive greater absolute subsidies. For example, consider two farmers of varying risk levels. The first faces a premium rate of \$20 for \$100 of liability while the second pays \$10 for \$100 of liability because he has a lower-risk farming operation. If the public subsidy is 50 percent, the first farmer can expect to receive \$10 per \$100 of liability as compared to \$5 for the lower risk farmer. Thus, the farmer facing higher risks receives a higher subsidy for the same level of coverage.

Higher subsidies for higher risks create a skewed geographic distribution of benefits because yields and relative risk are inversely related: farmers with more productive land and higher yields have lower relative risk. Farmers with lower risks receive less subsidy and, when that subsidy is divided by their higher yields, it is a smaller percentage of their income. The net result is to induce farmers to grow crops in unsuitable areas and make those farmers heavily dependent on crop insurance payments for their income.

To illustrate how the crop insurance subsidies differ within and across different states, consider the actual premium rates that were used in 1998 for corn in Illinois and Texas. The government sets the rates using nine yield classifications for lowest to highest yield within each county. As Figure 2 shows, crop insurance payments range from 5.6 percent to 1.6 percent of gross revenue in Illinois, as compared to 30.1 percent to 9 percent in Texas. All of these calculations assume that the rates are set properly and that there are no actuarial problems. In reality, however, actuarial problems are greater in Texas than Illinois. Thus, the differences are actually greater than those presented in Figure 2.

Do crop insurance subsidies change the incentives to produce in different regions across the country? There is general consensus among academic observers that crop insurance has increased planted acreage and distorted crop mix. My estimate is that there may be up to 10 percent additional crop acreage because of crop insurance.

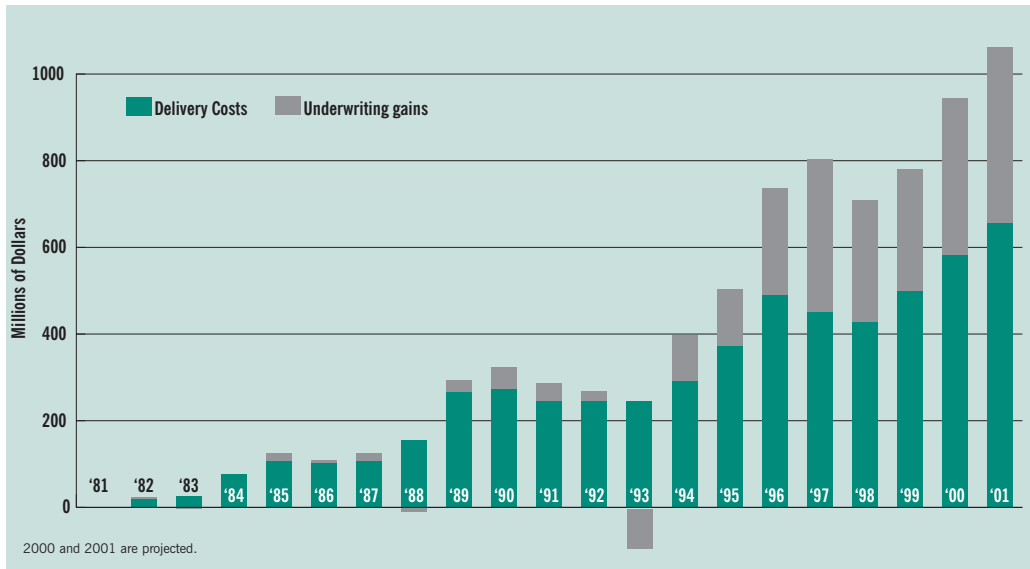
### THE EFFECT OF SUBSIDIES ON PRIVATE INSURANCE COMPANIES

THE FEDERAL GOVERNMENT REIMBURSES PRIVATE companies for selling and servicing policies to farmers at 24.5 percent of unsubsidized premiums. That is, for every \$100 in sold premiums, the insurance company receives \$24.50 from taxpayers to cover delivery expenses. This statute-established percentage bears little relationship to the actual cost structures faced by companies. While the aggregate national cost for crop insurance companies may be close to the percentage, the costs of selling and servicing crop insurance vary greatly from one area of the country to the other.

Companies, through a special arrangement with the government called the Standard Reinsurance Agreement (SRA), also share in the risk of the policies they sell. The SRA

Figure 3

**PAYING THE INSURERS: History of Federal Expenditures for Delivery Costs and Underwriting Gains for Crop Insurance.**



limits the losses for any company by state. In addition, within some limited constraints, companies can pick the risk they want to keep and the risk they wish to pass on to the government. While some companies are better than others at this selection process, the underwriting gains as a percentage of retained premium averaged 17.3 percent from 1992 to 1999. In recent years, the companies retained between 80 and 90 percent of the unsubsidized premiums for all federal crop insurance sold. At 80 percent times the 17.3 percent underwriting gains, underwriting gains equal 13.6 percent of all premium. It is common to use 10 to 15 percent to make cost estimates.

Figure 3 presents estimates of the historic taxpayer cost for delivery and underwriting gains by the private companies. The changes in federal crop insurance implemented as part of the 2000 Agricultural Risk Protection Act will soon push those costs above \$1 billion per year.

When we add the expected risk-sharing returns to the 24.5-percent delivery expense reimbursement, we discover that an average of 35 to 40 cents goes to the private insurance providers for every dollar of unsubsidized premium. In private lines of insurance, such a ratio is not uncommon. But in private markets, companies pay the full costs of risk sharing, ratemaking, and product development without taxpayer assistance, and prices are set competitively rather than established by statute.

Because subsidized products are universally available for political reasons, the government must provide the special risk sharing arrangements that assure insurance companies that they will not lose money, even in the worst markets. The actuarial performance in some markets remains so poor that companies make little money by selling in them. They are happy to do this, however, because doing so maintains the political support for the program. The companies are also com-

pensated through expense reimbursements and some underwriting gains for the best risk in the bad markets. Thus, there is little incentive among the companies or the government to fix the actuarial problems that remain in many states.

If a company has no opportunity to compete with premium rates, just how do the private crop insurers compete? Obviously, companies try to differentiate themselves with the service they provide farmers. Some companies offer other insurance products to complement the standard product that is known as Multiple Peril Crop Insurance (MPCI). For

example, many of the companies that sell MPCI have a history of selling private hail insurance, which has been available in the United States since the 1880s. Under the current program, farmers receive a discount on their MPCI premium if they have bought a separate hail contract. Since the same agent sells both, there is some cross subsidization from the government reimbursements. Further, some companies compete by cutting the price of the private hail insurance that a company sells with MPCI. A major European reinsurer of both the private hail product and MPCI for the U.S. companies claims that the companies have experienced significant losses on private hail due to this behavior. American farmers who purchase private hail are the primary beneficiaries of this behavior. In short, the government subsidies on MPCI have likely contributed to some significant problems in the private hail market. One private hail provider who refused to participate in the government program on philosophical grounds has recently succumbed and now sells MPCI.

Another way that the companies compete is to seek the best business. With some of the best risk, companies can expect to make in excess of 25 percent of retained premium on the risk-sharing agreement. The best business is clearly with the farmers who have the lowest risk. Access to the best farmers comes through the private agents selling crop insurance. Thus, competition among companies for agents selling in the best risk areas is fierce. This behavior has resulted in some high commissions for agents with the best business. Anecdotal evidence suggests that these agents can get around 20 percent of total premium. Because 20 percentage points is a very large share of the 24.5 percent that the government reimburses companies for all expenses, there is obviously some cross subsidization. The companies can afford to do this because they can make good money on the select business in the risk sharing agreement.

The effect of increased subsidies may flow mainly to agents who help companies find low risks and companies who enjoy underwriting gains from this business. Even in the high-risk regions, both agents and companies gain as the subsidies encourage increased sales. Unsubsidized premiums are expected to grow by more than \$500 million this year, to a level of more than \$3 billion. Thus, crop insurance companies will have an expected underwriting gain of between \$300 and \$450 million.

Further, for the most part, the new business will come from selling higher value insurance to the same farmers. Costs for selling to the same farmers should not change. Yet, the reimbursement expenses will remain 24.5 percent for most business. When the same farmer buys more expensive and higher coverage, reimbursement for the companies will grow proportionally. This occurs even though the farmer is not paying the additional premium in many cases – it is the new premium subsidies that allow the same farmer to buy more protection for roughly the same dollars. In short, taxpayers will spend an additional \$150 million in reimbursement expenses this year, but crop insurance will probably cover few additional farmers.

What are we getting for the costs of reimbursing private companies to sell crop insurance? The private sector is likely better at selling and servicing crop insurance than the government. In addition, the private sector has developed new products, including new revenue insurance products, in recent years. This means that the private companies are offering farmers more choices, better products, and better service than they would receive if this were strictly a government program. But are taxpayers well served by the \$1 billion price tag? And could the same results not be accomplished with fewer subsidies and an improved regulatory environment?

## CONCLUSION

WHAT WAS ONCE A GOOD IDEA — USING CROP INSURANCE to share risk in agriculture — has become bad public policy in America. What was touted as a “market-based solution” is now very costly, inefficient, and inequitable because of the subsidy design. Only a decade ago, this program cost about one-half billion dollars. In the near future, these costs will be \$3 billion, representing a six-fold growth in ten years.

There seems to be no end to the expansion of this program. The most recent reform added another \$1.34 billion per year to the cost and it is still unlikely to result in enough participation to stop Congress from passing ad hoc disaster aid in bad crop years. A program that was once available for only the major commodities has been expanded to include more than 100 crops; the Department of Agriculture and Congress have made it an explicit goal to include all crops in the United States.

The number of stakeholders who now benefit from these

programs makes any meaningful reform unlikely. What is more, these stakeholders are extending their influence beyond the U.S. borders. The Europeans are considering introducing similar risk management programs, and American experts are traveling to developing countries to promote the U.S. model even though only a wealthy country can afford such programs. Furthermore, the American program has likely crowded out the opportunities for developing countries to foster true market-based risk sharing since many of the international crop insurers are much more interested in the United States than they are in a developing country. This interest has obviously grown, given the new subsidies and the great growth in the U.S. crop insurance program.

The design and implementation of the American crop insurance program have strayed greatly from the goal of a more market-based risk sharing arrangement in agriculture. High government subsidies, the persistent use of free dis-

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aster aid, and program expansion have combined to create a complex policy that distorts production patterns and delivers unbalanced benefits to the nation’s farmers. Even ad hoc disaster assistance may be more efficient, less costly, and more equitable than the risk management programs we have created in the past twenty years. **R**

## READINGS

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