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**DISASTER ASSISTANCE FOR U.S. FARMERS:
AN OVERVIEW OF THE CURRENT DEBATE AND TWO PROPOSALS**

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**DISASTER ASSISTANCE FOR U.S. FARMERS:
AN OVERVIEW OF THE CURRENT DEBATE AND TWO PROPOSALS**

The U.S. drought of 1988 has again focused attention on federal assistance to farm operators affected by natural disasters. Disaster aid to farmers, which currently includes subsidized crop insurance, emergency loans, and direct payments, has been a significant claimant on federal outlays since the mid-1970s. Its cost has generated on-going national debate and continuous policy experimentation. Genealogy of this debate is explored in this article, and two proposals are advanced.

The Farm Production/Financial Environment and Disaster Aid

Farm disaster assistance was negligible prior to fiscal year (FY) 1975 (Table 1). In contrast, between FY 1975 and FY 1982, disaster loans and payments averaged 8.5% of annual net farm cash flow. Despite a sharp decline since FY 1982, disaster aid has still averaged 2.8 percent of annual net farm cash flow.

The increase in disaster assistance during the mid-1970s was associated with several changes in the farm production/financial environment. One was increased variability in U.S. crop yields (Figure 1). The standard deviation about trend-line aggregate yield for major cereal crops equalled 4.6 percent of average aggregate yield between 1950 and 1969. Since then, this ratio has more than doubled to 11.0 percent.

The four largest declines in yields between successive years, 1974, 1980, 1983, and 1988, were associated with national droughts. Because droughts occurred before 1970, they are

probably not the only cause of increased variability. Others may be changes in production practices, in weather variables other than rainfall, and in the distribution of production.

At about the same time that yield variability began to increase, another major change occurred in the farm production/financial environment. In 1973, an income deficiency program was instituted for wheat, feed grains, and cotton. It was later extended to rice. Under this program, whenever market price is less than the established income target price for these crops, farmers are paid the deficiency between the target and market price, subject to a maximum payment equal to the target price minus loan rate.

An income deficiency program substantially changes the financial effects of a widespread natural disaster. The reason is the short-term inelastic demand of major U.S. field crops. This economic characteristic means that a given percent decline in market production causes a greater percent increase in market price, resulting in more income for farm operators as a group. To illustrate, the 1988 drought reduced U.S. soybean production by 21 percent compared with 1987 production. However, soybean prices were 48 percent higher during September, October, and November of 1988 than in 1987. Thus, despite a severe drought, harvest value of U.S. soybean production was 22 percent higher in 1988.

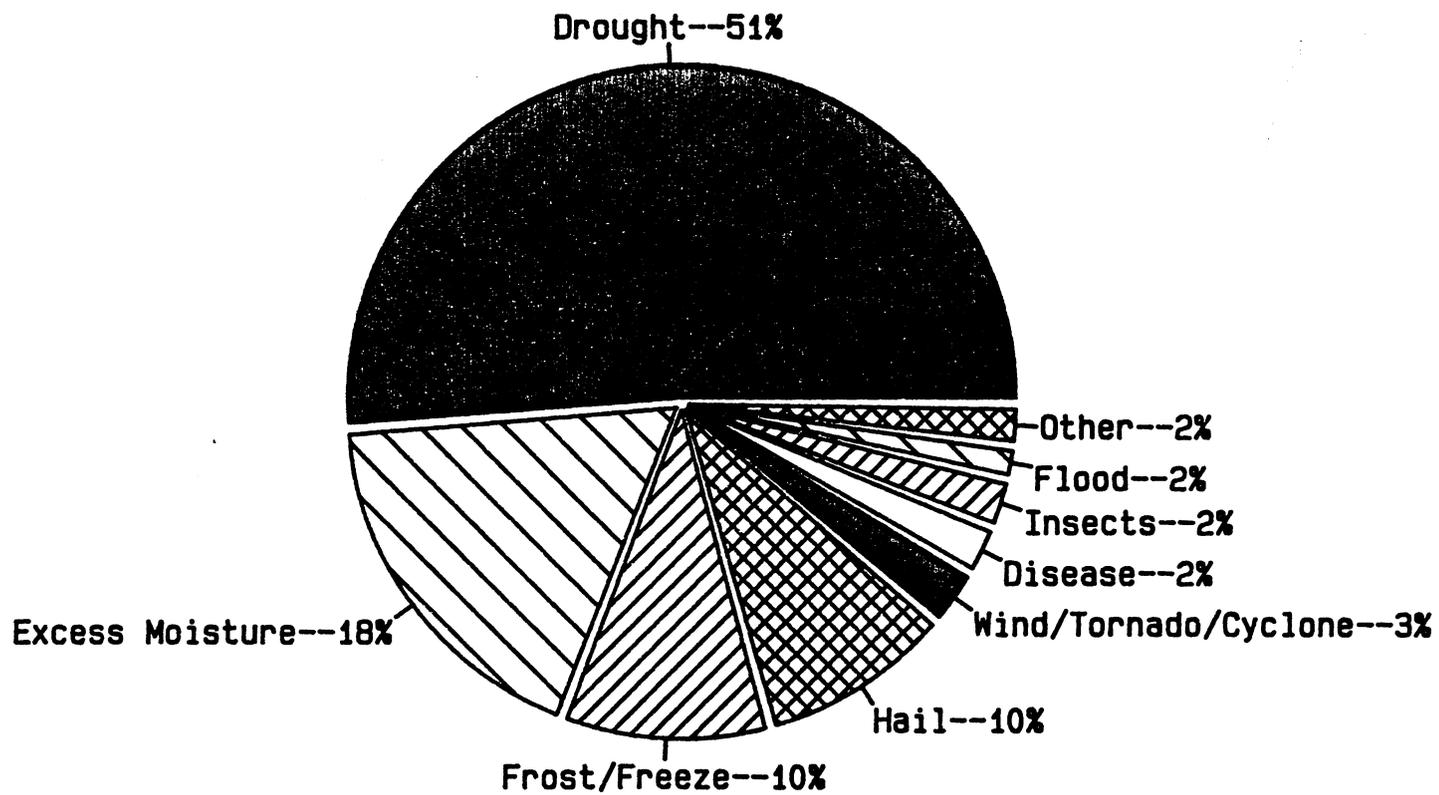
In contrast, the aggregate impact of the 1988 drought on corn producers differs substantially from its aggregate impact on soybean producers, who receive no deficiency payment. Corn

production was 34 percent lower in 1988, while market price was 65 percent higher during September, October, and November of 1988. The net result was a nine percent higher value of corn production in 1988 than 1987 based on harvest-time market prices. However, higher market prices mean lower deficiency payments. Based on the 1988 loan rate of \$1.77 and target price of \$2.93, and assuming that deficiency payment is received on 5.37 billion bushels of corn (the average for 1986 and 1987 crops), the adjustment for lower deficiency payments means the harvest value of corn production in 1988 was actually 30 percent less than in 1987.

The drought's impact on individual farmers depends on both the aggregate market effects and the change in their production relative to the change in market production. For soybeans, a farmer would have the same harvest value of production in 1988 as in 1987 even though his/her production was 32 percent lower. In contrast, assuming the producer was enrolled in the 1987 and 1988 corn programs (true for over 80 percent of corn base acres), he/she would have to harvest a 27 percent larger crop in 1988 than in 1987 for the harvest values to be the same.

As 1988 corn illustrates, a deficiency payment program negates the protection provided by short-term inelastic demand against the financial consequences of widespread natural disasters. A target price means a constant revenue per unit of output. Thus, reduced output translates into lower income for producers as a group. This observation takes on added significance because droughts are by far the largest cause of yield loss (Figure 2).

FIGURE 2. AVERAGE PERCENTAGE OF FEDERAL CROP INDEMNITIES ATTRIBUTED TO SPECIFIC HAZARDS, 1948-86



SOURCE: Agricultural Statistics, 1987 (USDA).

Droughts have a greater tendency than other natural disasters to affect market production and, thus, trigger the inelastic price response.

Protection against the financial stress resulting from a natural disaster can be provided by insurance. Protection can also be provided by using financial assets and assets that can readily be converted into financial assets and/or nonfarm income to meet expenses not covered because of a natural disaster. These strategies are forms of self-insurance.

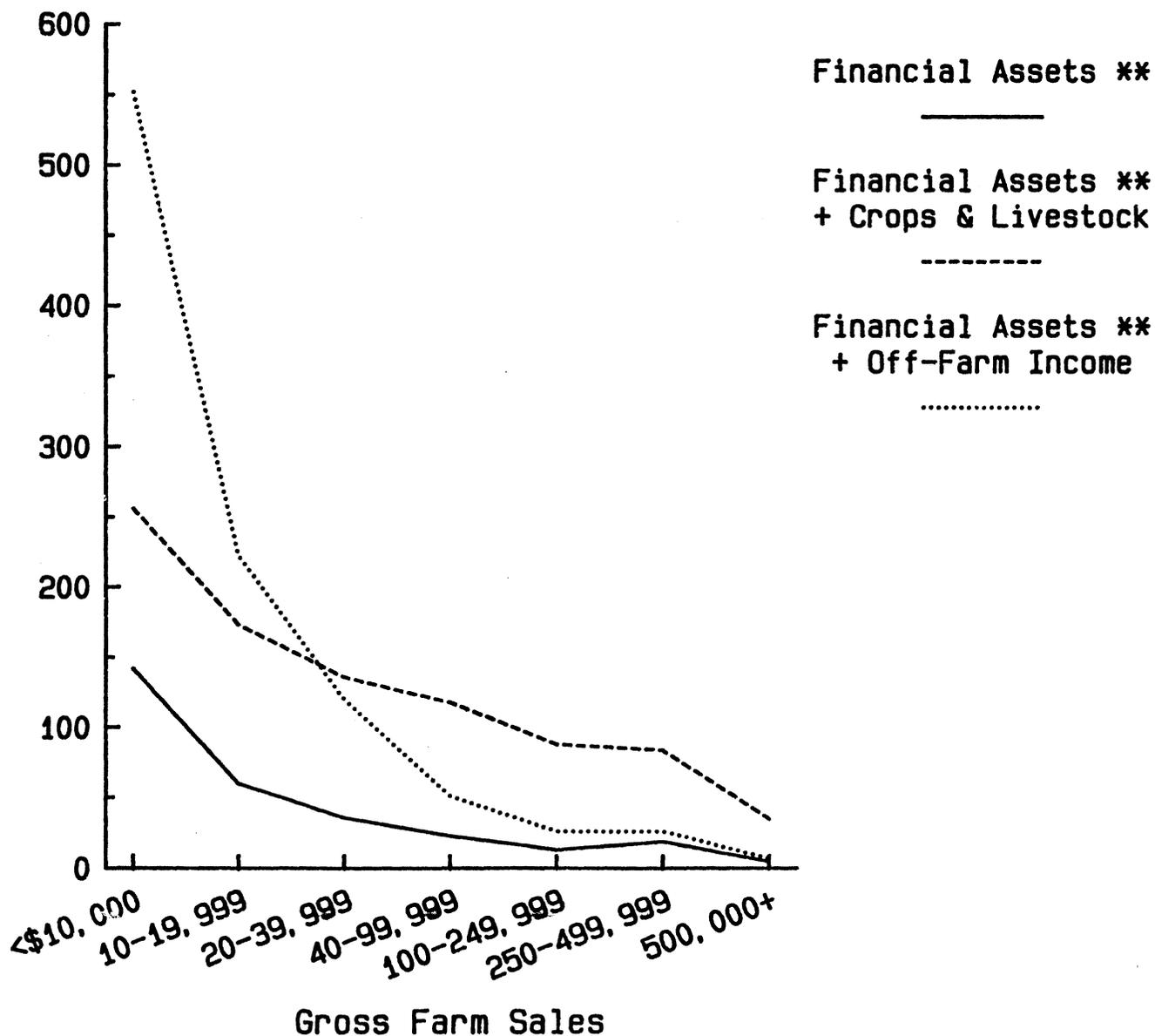
Several sources of self-insurance for farm operators are presented in Table 2 as a percent of farm cash expenses: farm household financial assets, farm household financial assets plus farmer-held crop and livestock inventories, and farm household financial assets plus nonfarm income. Each ratio declined substantially between 1950 and 1981, before increasing during the 1980s. The lower each ratio, the more likely money will need to be borrowed to cover expenses when a natural disaster occurs.

A second aspect of self-insurance is that it declines appreciably as farm size increases (Figure 3). Thus, commercial farms appear to be most at risk if a natural disaster strikes.

To summarize, the emergence of disaster assistance to farmers as a major federal expenditure during the mid-1970s coincided with an increase in yield variability, implementation of income deficiency payments, and an on-going decline in self-insurance. These coincidences are probably more than happenstance.

FIGURE 3. SELF INSURANCE BY FARM OPERATORS BY FARM SIZE, U.S., 1987.

Coverage of Cash Expenses (%) *



* Excludes household cash expenses.
 ** Includes household assets.
 SOURCE: Economic Indicators of the Farm Sector: National Financial Summary, 1987.

Disaster Assistance Programs

Emergency Loans

Loans to farmers affected by natural disasters were first authorized by the Disaster Loan Act of 1949. Farmers Home Administration (FmHA) was designated as the lender. FmHA has since made about \$23 billion in emergency disaster loans to farmers, most as direct loans. A second FmHA program was authorized by the Emergency Livestock Credit Act of 1974. This program guaranteed commercial loans to livestock and poultry producers who experienced financial stress because of a natural disaster. It was terminated in 1979 after \$1.0 billion had been lent.

FmHA disaster loans averaged \$2.4 billion annually from FY 1975 through FY 1982 (Table 1). Since then, volume has declined, partly because eligibility was tightened. For example, the Food Security Act of 1985 limited eligibility to family-size farms who cannot obtain credit elsewhere. Also, beginning with 1987 crops, only farmers who buy crop insurance can receive disaster loans on those crops. The Disaster Assistance Act of 1988 waived this requirement for 1988 crops; however, if the emergency loan will be used to finance planting of 1989 crops, 1989 crop insurance must be purchased.

As of March 31, 1988, \$8.7 billion in emergency disaster loans was outstanding. Of this value, 76 percent was held by delinquent borrowers. Furthermore, the value of these delinquent loans totalled 38 percent of all loans extended since the program began. The high delinquency rate suggests either that the loans

were extended to farmers already financially stressed and/or the burden of paying off the disaster loans precluded recovery from the initial financial impact of the disaster.

Direct Disaster Assistance

Direct disaster assistance began in 1961. Livestock producers were permitted to purchase government feed grain stocks at prices less than the farm program loan rate when a natural disaster reduced their production. Current livestock disaster assistance also includes cost-share assistance for a) feed purchased beyond the normal amount, b) transporting hay and forage purchased beyond the normal trade area, and c) transporting livestock to grazing areas.

Federal outlays for livestock disaster assistance have historically been small, partly because aid is limited to producers who grow their own feed (Table 1). Table 1 does not include the value of haying and grazing set-aside and conservation reserve acres, an important source of livestock disaster assistance in recent years.

Direct disaster assistance was first authorized for crop producers by the Agriculture and Consumer Protection Act of 1973. Upland cotton, feed grain, and wheat producers who participated in the set-aside program could receive payments for prevented planting or low yield. This Disaster Payments Program, which was extended to rice producers in 1975, averaged almost \$500 million

annually from FY 1975 through FY 1982 (Table 1). Because of its cost, it was terminated by the Federal Crop Insurance Act of 1980.

Nevertheless, direct assistance for crop producers continues to be authorized when widespread natural disasters occur. These ad hoc programs include The Disaster Assistance Act of 1988 and approximately \$550 million of payment-in-kind certificates for farmers hurt by the 1986 drought in the southeast. The U.S. Department of Agriculture (USDA) currently estimates the former will provide over \$3.0 billion in aid to crop farmers.

Federal Crop Insurance

Federal crop insurance was first authorized by the Federal Crop Insurance Act of 1938 to cover drought, hail, wind, flood, frost, disease, insect, and other unavoidable causes of crop losses. As with previous attempts by private companies to offer multiperil insurance, large losses were incurred. In response, Congress reduced crop insurance to an experimental program in 1947. Limited expansion was subsequently undertaken. From 1948 to 1979, acres insured increased from 8.9 to 21.4 million.

The Federal Crop Insurance Act of 1980 established crop insurance as the major federal disaster assistance program. Farmers who purchase crop insurance elect one of three prices and one of three yield levels. The prices vary by crop and year. The yield levels are 50, 65, and 75 percent of the farmer's Federal Crop Insurance Corporation (FCIC) yield. FCIC yield equals a 10-year moving average, minus high and low, of the farm operator's

county average yields or actual verified yields if three years of verified yields exist. Indemnity collected (insurance payment) equals the elected price times the following: FCIC yield times elected yield percent minus actual yield.

The premium paid by a farmer depends on the elected yield and price, his/her yield history, and the federal premium subsidy. The latter was authorized by the Federal Crop Insurance Act of 1980 to encourage participation. It equals 30 percent of the premium for the 50 and 65 percent elected yields. For the 75 percent elected yield, it equals the absolute dollar subsidy for the 65 percent elected yield. This typically translates into a 15-20 percent subsidy.

The subsidized premiums and development of an individualized insurance program based on a farmer's actual yields as opposed to county average yields, along with encouragement from lenders, have resulted in increased participation. Acres enrolled totalled a preliminary 49.4 million in 1986, an increase of 131% since 1979. Participation was probably higher in 1987 and 1988 and should increase further in 1989. One reason is that The Disaster Assistance Act of 1988 requires, subject to certain exceptions, that farmers purchase 1989 federal crop insurance if they accept disaster payments and their 1988 yield was less than 35% of normal. A second reason is that farmers with 1988 crop insurance will collect more disaster assistance, including indemnities, than farmers without crop insurance.

Nevertheless, participation in federal crop insurance remains lower than desired, while indemnities have exceeded farmer-paid premiums by over \$300 million per year between FY 1983 and FY 1987 (Table 1). Congress has responded by establishing a commission to study the current program. Its report is due in 1989.

Proposals

While cost of The Disaster Assistance Act of 1988 has again placed disaster assistance for farmers on the national agenda, the political system has continually reaffirmed America's commitment to such assistance. Thus, history suggests disaster assistance to farmers will continue. Given this expectation, two proposals are delineated. One addresses federal crop insurance; the other, a self-insurance program.

A Federal Crop Insurance Proposal

A two-part proposal is advanced. One part concerns determination of elected prices while the other concerns determination of elected yields.

The high elected prices, which are the most frequently chosen of the elected prices, have historically and continue to appreciably exceed the national average cash cost of production, excluding cash land rent and principal payments (hereafter referred to as national average cash production costs). To illustrate, for the 1987 program, the high elected prices for corn, wheat, and soybeans were 119, 132, and 158 percent of

national average cash production costs. These costs were calculated using a 10 year moving average of national yields, minus the high and low, and the cash costs reported by USDA's annual cost and returns survey. They include interest payments and taxes.

Not only are the high elected prices substantially above the national average cash production costs, they also change as market prices change. For example, the high elected price for corn declined from \$2.90 in 1984 to \$2.00 in 1987, before being raised to \$2.60 in 1989. Moreover, the high elected price for 1989 soybeans will be determined by a formula based on market price. Thus, it appears that the current crop insurance program is keyed to protecting income as opposed to cash production costs.

By providing insurance against income losses exceeding the national average cash production costs, the current insurance program encourages risky investment and managerial decisions. These moral hazards of insurance increase its costs to the insurer.

Evidence on the potential existence of moral hazard costs can be gleaned from data for the 1983 through 1985 programs. During this period, soybeans accounted for 37 percent of all net federal crop insurance indemnity payments, but only 18 percent of the value of maximum insured production. Wheat accounted for 24 percent of total net indemnities and 18 percent of maximum insured production. In contrast, corn accounted for only one percent of total net indemnities but 27 percent of maximum insured production. The relative differences in payouts among the crops are

consistent with moral hazard: during these years, the ratio of high elected price to national average cash production costs was 169 percent for soybeans, 149 percent for wheat, and 131 percent for corn.

Not only do the current price elections appear to increase the moral hazard cost of federal crop insurance, they also inflate the price of land and other capital investments. The consistent excess of indemnities over farmer-paid premiums is capitalized into the value of these inputs, just as price and income supports are capitalized into input values.

To avoid the moral hazards and associated higher costs of insuring against income losses above national average cash production costs, we propose that the high price elections be equal to the national average cash production costs. Applying this criteria to the period 1983 through 1985 would have substantially reduced, and may have eliminated, the net federal cost of insuring corn, soybeans, and wheat. At the least, the ratio of high price election to national average cash production costs should be reduced for soybeans and wheat to the ratio for corn. This, in and of itself, would substantially reduce federal losses and moral hazard costs.

The second part of the crop insurance proposal is tied to the short term inelastic demand for crops. As the 1988 drought illustrates, for a crop with no deficiency payment, an individual farmer suffers financial stress only if his/her yield (production) declines more than the decline in market yield (production).

Consequently, to more closely align crop insurance with the financial stress that results from a natural disaster, we propose that elected yields be stated relative to changes in market yield.

To illustrate, for the 75 percent elected yield, indemnities are currently collected whenever an individual farmer's yield is at least 25 percent below his/her FCIC yield. Under this proposal, indemnities would be collected only when the decline in a farmer's yield relative to FCIC yield is at least 25 percentage points more than the percent decline in national yield. For example, should national yield decline 10 percent, a farmer's yield must decline at least 35 percent below his/her FCIC yield before indemnities would be collected. If national yield does not decline, the proposal becomes the current program--an indemnity is received when yield is at least 25 percent below the FCIC yield.

Under the current crop insurance program, more farmers collect higher net indemnities in years of widespread drought, despite higher prices. To illustrate, during the 1983 crop year, a year of nationwide drought, indemnities were collected on 49 percent of insured soybean acres. Net indemnity per acre indemnified averaged \$31.43. In contrast, during the 1984 and 1985 crop years, years with no nationwide drought, indemnities were collected on 38 percent of insured soybean acres; and net indemnity averaged \$20.15 per acre indemnified. Soybean prices averaged 44 percent higher during 1983 than during 1984 and 1985 marketing years.

If the share of acres indemnified and per acre net indemnity in 1983 had been the same as in 1984 and 1985, savings of \$54 million would have been achieved. This proposal would make the payment rates more similar in drought and non-drought years by targeting indemnities to those farmers who experience financial stress because of a drought.

The allure of this proposal for elected yields is undercut for wheat, feed grains, cotton, and rice because higher prices are offset by lower deficiency payments. However, since yields must decline at least 25 percent before indemnities are collected, the current program provides only limited protection against the loss of deficiency payments. This dilemma suggests that a program to insure against the loss of deficiency payments may be worth investigation.

The proposed changes for elected price and yield would reduce the net benefit and, thus, the attractiveness of crop insurance to those who currently purchase it. However, cost of crop insurance to the federal government would substantially decline. Subsequently, premiums may decline. This would encourage participation among current nonparticipants. Furthermore, a lower federal cost and reduced premiums would improve the political attractiveness of making crop insurance a requirement for price and income supports.

A Disaster Assistance Self-Insurance Proposal

An alternative to current disaster assistance programs is to encourage self-insurance. This could be accomplished by allowing

farm operators to place up to a pre-specified share of their cash farm expenses into an individualized disaster assistance account (IDAA). Taxes on income earned by an IDAA would be deferred until the year the income is removed. Funds could be removed whenever a natural disaster caused production to decline a pre-specified amount. Any amount left when the operator stops farming could be converted into a retirement account.

Cost of IDAAs to the federal treasury would depend on the program's parameters. Assume that a farmer can accumulate a maximum of 40 percent of cash expenses in an IDAA and everyone participates. Because cash expenses currently total about \$110 billion (excludes principal payments), \$44 billion would be contributed to IDAAs. Assume that only returns are tax deferred, and they accrue at an 8 percent annual rate. Thus, \$3.5 billion would be tax deferred annually. Assume the earned returns would be taxed at the highest personal tax rate of 33 percent in the year earned but at zero when removed from the account. Amount of federal income tax lost would, therefore, equal \$1.16 billion annually.

Counting the currently projected costs for 1988 disaster assistance, direct federal disaster assistance to farmers plus net federal crop insurance indemnities will average over \$1 billion annually since FY 1982. Therefore, even with the conservative assumptions on the cost of an IDAA, a 40 percent IDAA would be no more expensive than current disaster programs. Cost of IDAAs could be further reduced by allowing Individual Retirement

Accounts and Keough retirement plans to be used for disaster assistance as well as retirement purposes.

Assuming that the share of cash expenses which could be placed in an IDAA would be less than 100 percent, IDAAs would not cover situations where yields approach zero. To cover this possibility, the current crop insurance program could be converted into a catastrophe program, with zero cost to the federal government. For example, it could cover situations where yield is less than 25 percent of normal. An IDAA would also probably not cover a situation where it was triggered repeatedly within a short period of time. To cover this possibility, standby authority could exist for ad hoc disaster payments in this situation.

IDAAs would compete for a farmer's limited capital. This capital could also be used to finance business expansions. However, an IDAA is not incompatible with long term business expansion. By improving the asset ledger on the balance sheet, accumulation of funds into an IDAA would set the stage for future growth and provide a less risky base for that growth.

In summary, IDAAs could be designed to cost no more than current programs. Unlike current programs which exclude many producers, notably livestock producers who purchase all their feed, IDAAs would be available to all farm operators. Furthermore, they would reduce the need to borrow in an emergency, which the FmHA disaster loan program suggests is not a desirable strategy in many cases, and may increase savings, an emerging national concern.

Summary

Increased yield variability, less self-insurance by farmers, and income support payments based on target prices have combined to increase national attention and resources devoted to disaster assistance for farmers since the mid-1970s. Counting the currently-projected 1988 disaster aid, direct disaster assistance and net federal crop insurance indemnities have averaged over \$1.0 billion dollars since FY 1982. Furthermore, emergency disaster loans have averaged about \$500 million.

A two-part proposal is advanced to reduce the cost of crop insurance to the federal treasury and potentially the premiums paid by farm operators. One part would base the elected prices on the national average cash cost of production, excluding cash land rent and principal payments. The other part would tie the elected yields to the decline in national yields. The former would reduce the moral hazard costs incurred by insuring income above cash costs, while the latter would target assistance to farm operators experiencing financial stress.

An alternative to revising the federal crop insurance program is also advanced. It would encourage self-insurance among farm operators by establishing individual disaster assistance accounts.

In conclusion, political debates during times of perceived crisis or extreme need may lead to larger government expenditures and/or different policies than a debate held at a less precipitate time. In the spirit of this observation, the current discussion and proposals are offered.