Recent Risk Management Policy Developments in North America and the
Prospects for Commodity Price Insurance in Developing Countries

Bruce L. Gardner
University of Maryland

Farm policy in both United States and Canada has moved away from
governmental regulation of commodity markets and toward individual risk management
in recent years. This paper reviews lessons learned from recent experience, and considers
the implications for price risk management policy in developing countries.

Regulation of Markets

The traditional cornerstone of U.S. risk management policy for agriculture is the
government’s establishment of support prices for the main agricultural products. These
began with attempted support and stabilization through a classic buffer stock in 1929.
This approach failed, and was suspended in 1931. Commodity storage programs were
reinstated later but have been almost completely abandoned since 1990. In the
Depression Era programs of the 1930s, policy shifted to regulating planting of crops,
which can be considered a stabilization program since idled land can be brought back into
production in high-price periods. But over the long term it became apparent that U.S.
acreage idling could not for long be effective in placing a floor under the U.S. farmer’s
price because of world market responses. Beginning in the Food Security Act of 1985,
the role of acreage idling was reduced, and annual acreage “set-asides” were abolished
completely in the Federal Agricultural Improvement and Reform (FAIR) Act of 1996.
By the mid-1990s U.S. agricultural policy had firmly eschewed both government-held

stocks and acreage set-asides (although substantial fixed payments to producers and
cropland idling under conservation programs remain).

Canada’s agricultural policies have followed a path similar in some respects, but
with less reliance on acreage controls and more reliance on collective marketing, most
notably through the Canadian Wheat Board. The CWB has an export monopoly for
Canadian wheat and barley, in that all exports must be sold through that agency. Farmers
then get a pooled price depending on the receipts the CWB is able to earn from the
exported commodities. This removes a large element of price risk management from
farmers’ hands. There has been a relatively low guaranteed price in the past, but today
the CWB provides no price insurance for producers.

*Crop and Revenue Insurance*

U.S. commodity programs never eliminated price risks for farmers. The programs
were sometimes ineffective, and many crop and livestock commodities were not covered
by these programs. U.S. farmers have throughout the 20th century purchased insurance
against some production hazards (e.g., hail, fire). It seems quite clear that many farmers
are significantly averse to risks that with small probability could wipe out their
investment and result in negative income, and that some farmers would choose to forego
profitable farming opportunities if there were no way to insure against such losses.

A series of experimental government-provided crop insurance programs was tried
crop insurance offered by the private sector but regulated and subsidized by the U.S.
Department of Agriculture. A 1994 Act increased premium subsidies from about 25% of
premiums paid to an average of 50%. In 1995 to 1998, crop insurance programs paid out
$1.77 in indemnities for each $1 received in premiums from farmers.
Given that crop insurance is a good deal for so many farmers, it is perhaps surprising that only 65% of major field crop acreage was insured in 1998. One reason may be that in 9 of the last 12 years the federal government has enacted ad hoc disaster relief payments to producers in areas where yields were low. Federal outlays for these payments totaled $4 billion in FY1992-96 and $1.9 billion in FY1999 – almost $1000 per U.S. farm in 1999. As USDA analysts have asked: “Why pay a premium for something that you would likely get for free?” (Schnepf and Heifner, 1999, p. 18).

In the Eastern Corn Belt rainfall is very seldom disastrously low, and while insurance premiums are low, the fact of their being low means that even a large premium subsidy does not mean much in dollar terms. Many farmers therefore see little value in crop insurance coverage. This situation led to a proposal in 1999 to replace crop insurance subsidies by a broader of risk management policy approach in which funds used for crop insurance subsidies could also be used to subsidize other risk management practices, including price insurance through put options, special farmers’ savings accounts, or even paying down existing debt.

In Canada, there has also been a trend toward more flexible and more market-oriented risk management policies. Canada has established a pilot program of put options for livestock producers, but Canada’s most far-reaching experimentation has been its series of grains programs in the 1980s and 1990s. The Western Grains Stabilization Program (WGSP) made payments from a fund partly financed by growers when their aggregate cash receipts from grains fell below a 5-year moving average. After accumulating large deficits without providing satisfactory income protection to producers, the WGSP was abandoned.

The market-wide stabilization approach was replaced in the 1980s by two programs, the Gross Revenue Insurance Program (GRIP) and the Net Income
Stabilization Account (NISA). These programs were tuned to each producer’s situation, with GRIP making crop-specific payments to producers when their production times the market-wide average market price fell below that producer’s established average yield times a “target” price. The program was packaged as insurance in that each producer paid a premium for this coverage (but about two-thirds of the premium cost was paid by a combination of provincial and federal funds).

GRIP combined features of the U.S. deficiency payment and subsidized crop insurance programs, and its comprehensive approach to the farmer’s risk situation was seen as a possible model for the future of U.S. programs. But it proved to have too little political support from farmers to justify its budgetary costs in the belt-tightening environment of the mid-1990s, and GRIP expired after 1995. NISA, a more broadly conceived but less costly program, continues. It is essentially a subsidized savings account into which producers can contribute 2 percent of the value of qualifying grain sales, to be matched by 1 percent each from provincial and federal governments. The producer can withdraw funds from the account if either annual farm operating income or family income falls below established triggers. NISA is the only remaining farm income protection program in Canada (see Huff, or Gray and Smith (1997) for further discussion). It does not provide the individual producer with options for choosing the degree of price protection they desire, and in that respect is less market oriented than price insurance under the type of program contemplated in the World Bank’s initiative.

Management of Price Risk

Several surveys of U.S. farmers have been undertaken to assess their plans and actions in risk management (a review of several surveys can be found in Harwood, et al., 1999). The general finding is that use of futures and put options has not substantially increased even as price support has been phased down since 1996. Nonetheless there is
evidence of interest in and willingness to pay for a variety of risk management strategies. The most commonly used are “keeping cash on hand,” i.e., saving, and commodity diversification. And, near-majorities of farmers use some form of forward pricing. The typical mechanism is not hedging through exchange-traded futures or options, but rather forward pricing of sales to local grain elevators (who then hedge their positions using futures).

An objection expressed by farmers to forward pricing is that while they are concerned about extremely low prices, they do not want to foreclose the prospect of above-average prices (which made them a lot of money in 1995 and 1996). This view makes farmers a natural candidate for put options with out-of-the-money strike prices, as a mechanism for price insurance that would meet the expressed preference. However, to date there has not been broad interest among farmers in buying these options. Among the reasons may be the rather rigid specifications of the options – 5000 bushel units (the output of 125 acres of wheat at U.S. average yields) and expiration dates and specifications tied to futures contracts. But probably the main impediment is a perception that the premium the farmer has to pay is too high. If the premium really is too high (in the actuarial sense that the expectation of gain at exercise is well below the premium), that should induce option writers to sell and earn expected profits, but in fact liquidity has not been great, especially for the longest-lived options.

This situation has led to calls for more flexibility in the provision of put options. Until recently U.S. law has permitted options trading only on exchanges regulated by the Commodity Futures Trading Commission (CFTC), and on specific CFTC-approved contracts (and between 1936 and 1974 the Commodity Exchange Act prohibited central market exchanges from commodity option trading altogether). In 1998, the CFTC introduced a pilot program in “agricultural trade options,” which permits any registered
merchant to offer option contracts to farmers for delivery to that merchant, with any strike price, expiration date, delivery conditions, and up-front premium paid by the farmer that the merchant and farmer find mutually acceptable. The largest U.S. grain merchant, Cargill, Inc., has asked that the rules for trade options permit producers to write “covered calls,” an example of which is a “Min-Max” contract that assures producers that they will receive no less than a pre-negotiated floor price in exchange for agreeing to receive no more than an offsetting ceiling price (Cargill, Inc., 1999).

Whether such contracts will be commercially successful remains open to question. The Min-Max contract, in particular, has the essential characteristics of a “collar” consisting of a simultaneous purchase of a put and writing of a call. The premium a producer receives for the call can partially or fully offset the cost of the put. If collars were to be an instrument of risk management policy, the cost to the government of subsidized puts could be offset by the government’s gain from owning calls, the gain being realized in years when market price rises above the call’s strike price. Despite the absence of high percentages of farmers buying such risk management instruments, there are reasons for believing the current thrust of U.S. policy will be effective over the longer term. Much of the lack of willingness to pay for risk management is the result of non-participation by the smallest two-thirds of U.S. farms. These farms get more than 90% of their income from sources other than farming, mostly off-farm work. Thus their income-earning portfolio is already highly diversified and so lightly weighted with commodity-

---

1 In the case of U.S. commodity policy, a type of collar arrangement has been implemented in the “Farmer-Owned Reserve (FOR) Program,” introduced in the Farm Act of 1977. The FOR program paid producers in advance (via a loan using the commodity as collateral), with subsidies to store grain when prices were low, but had a higher “call” prices at which subsidies ended and farmers had to repay their loans. The FOR Program created stockpiles which farmers saw as “overhanging” the market, and hence forestalling price rises that would otherwise have occurred in low-production years. The unpopularity of this perception among farmers is the most important reason why neither the FOR Program nor other government storage programs have survived in the 1990s. The broader implication is that any collar scheme may have an uphill battle for acceptance by producers.
dependent income that the additional income stabilization available from using forward pricing or put options is likely to be small.

The preceding is just to say that, paradoxically, the large-scale commercial U.S. farmer is in a financial-risk position more like that of a developing country producer who relies on one or two commodities for most of money income, and for whom low prices can easily mean economic disaster. Larger-scale U.S. farms are in fact heavy users of price risk-management tools. According to USDA’s 1996 survey, 40% of farms with over $500,000 in sales report some use of futures and 60% use forward contracting (not summing to all the farms because many use both tools). Moreover, lenders are known to require farmers who have large operating loans, often used to finance the purchase of calves for fattening in feedlots, to sell fed steer futures to approximately fix the feeding margin at the time the calves are purchased. Were the means to hedge the risk in feeding margins not available, a profitable scale of feedlot operation would likely not be available for many young or otherwise asset-poor farmers.2

A second argument that a price risk management institution may be a notable contributor to economic progress in agriculture can be drawn from some scholars’ historical analysis of the post-1940 acceleration of productivity growth in U.S. agriculture. After rising at a trend rate of less than 1 percent annually for roughly 40 years, total factor productivity (an index of aggregate output divided by an index of land, labor, and capital inputs) accelerated to a rate of growth of about 2 percent annually for a 60-year period beginning about the end of the 1930s. Real GDP (value added)

---

2 It may be said that developing country farmers differ from U.S. commercial farms in that those in developing countries typically have less business-related education and experience, and lack the skills to use price risk management tools effectively. Even if true, the fact that developing country farmers face a similar severity of price risk exposure emphasizes the potential payoff to price risk management institutions that are better geared to the developing country situation than are existing commercial instruments.
originating in agriculture began to accelerate at about the same time (Figure 1). It has been argued that following the economic disaster that befell farmers in the 1920s and the Depression of the 1930s, the relative price security established by the New Deal farm programs caused a sea change in farmers’ willingness to invest and adopt new technology (often embodied in tractors, machinery, and other capital equipment) and this set a new path of technological dynamism (see Clarke, 1994). These programs, as they evolved in the late 1930s, essentially provided farmers price insurance – with the notable feature that the strike price was in the money and the option was highly subsidized.³

The argument that these programs caused the productivity acceleration is tenuous because other factors were plausible causes of at least part of the productivity acceleration, and because the New Deal effect itself may have been more a matter of the infusion of subsidies than of stabilizing prices. But we should at least take seriously the possibility that reducing price risks will give a boost to productivity-enhancing behavior among farmers in developing countries.

In recent years there have been moves to shift government programs beyond crop insurance toward private sector risk management mechanisms. The Food Security Act of 1985 introduced a pilot program in which producers in selected counties could opt out of the target price and deficiency payment program and in exchange receive subsidized put options. This program was refined and expanded in the 1990 Farm Act.

The 1996 FAIR Act took the more sweeping step of eliminating target prices and converting deficiency payments to annual fixed payments. Under the FAIR Act there are several programs that experiment further with market-based risk management. They

³ Price protection was subsidized but not free to farmers because farmers typically had to hold some cropland idle in order to obtain payments.
expand upon federal crop insurance programs in that subsidies are paid for insurance policies that cover combinations of price and yield risk. Since 1996, three variations on the theme of revenue insurance have been introduced, and two more were approved for sale in 1999. In 1998, roughly 10 percent of U.S. grain and soybean acreage was insured under some form of revenue insurance (see Glauber, 1999).

Perhaps the most interesting of the new insurance products is “crop revenue insurance,” an elaboration of the existing federal crop insurance program developed by a private company, American Agri-insurance, and offered so far principally in Iowa and Nebraska. It provides insurance coverage to farmers similar to that afforded by the Canadian GRIP program. Here the farmer selects from a schedule of yield and price protection options, paying a higher premium the higher the protection. An indemnity is paid if actual yield times the harvest-time price in the producer’s county falls below the insured price times yield. The yield and price options are well below mean yields and prices so that all policies contain a substantial deductible. The government has paid an average of about a third of the premium cost.4

A striking aspect of the present U.S. and Canadian risk management policy debates, in the context of the long history of experiments in agricultural policy, is that most parties have come to a position substantively similar to that proposed for developing country producers by the International Task Force on Commodities. That is, the most promising way to deal with the economic and political situation of agricultural producers facing market risks is to assist them by subsidizing privately-provided risk management

---

4 The government also subsidizes the insurance companies by covering some administrative costs and by offering reinsurance to the companies on favorable terms. The overall budget cost of the crop insurance program is about $1.7 billion annually, to which about $1.5 billion will be added under legislation enacted in May 2000. The aggregate market value of the crops covered (grains, oilseeds and cotton) is about $60 billion.
tools. In both the North American and developing country contexts, the hope has been expressed that in future farmers will be willing to pay the full cost of such insurance. There is some evidence from experience that farmers are in fact willing to pay for insurance; but as long as it is politically possible to maintain subsidies, producers will naturally prefer that alternative. Since the political means for producer beneficiaries to maintain subsidies through the ITF-proposed mechanism is rather limited as compared to the politics of domestic agricultural politics in the U.S. or other developed countries, the approach is perhaps more promising in the developing country than in the U.S. or Canadian cases.

Summary of lessons learned

1. Many although not all commercial-scale farmers are sufficiently risk averse to be willing to engage in forward sales or buy insurance against price and other revenue risks at actuarially sound premium rates.

2. There is some reason to believe that the availability of such insurance will result in producers undertaking investment and specialized production programs that they would not if fully exposed to price risk.

3. It is hard to market price risk management tools based on central market (futures or spot) prices directly to farmers. Marketing entities close to farmers must serve as retailers, including an educational function and tailoring the product to fit local farmers’ situation.
References


Glauber, Joseph W. Statement before the U.S. Senate Agriculture Committee, March 10, 1999.


Figure 1. Total Factor Productivity Growth and Real Farm GDP per Person in U.S. Agriculture