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Will Policy Changes Usher In a New Era of Increased Agricultural Market Variability?

by Keith J. Collins and Joseph W. Glauber

In various forums during the past eighteen months, we have often heard it said that more farm price and income variability in agricultural commodity markets would certainly follow passage of the Federal Agriculture Improvement and Reform Act of 1996 (1996 Act). A base for this conventional wisdom has been, first, lower crop carryover stocks of the past few years and, second, dramatic price fluctuations for major commodities in 1996 and 1997. These events have raised concerns that the 1996 Act, with its provisions for a diminished role of government in market intervention, will contribute to increased price variability, and consequently income variability, in these major markets. Our view, presented at a Senate hearing on volatility, is that there is no compelling argument to make us believe that price and income variability for most major commodities will be much different than during the recent decades prior to the 1996 Act.

A market-oriented farm economy requires some price variability to signal needed market adjustments in supply and demand. However, because the demand for farm products is relatively price inelastic and weather causes large fluctuations in farm production, potentially large swings in farm prices and incomes have been a longstanding farm policy concern. The view is that such swings may cause undue farm financial stress, lead to inefficient resource allocation, and damage certain processors and consumers. Such concerns led to a variety of tools to reduce variability and many legislative provisions designed to affect production, storage, and demand.

Changes in price variability in agricultural markets

We must understand the past to determine if recent farm policy changes may be associated with greater market price and income variability. For

example, the 1970s was a period of extreme variability in commodity markets as crop and livestock prices shot up when the former Soviet Union began importing large volumes of grain. Changes in government acreage controls and exchange and interest rates also contributed to price and income fluctuations. Volatility in annual grain prices, as measured by each decade's coefficient of variation, more than doubled for wheat, corn, and soybeans during the 1970s, compared with the 1960s. Variation in milk prices more than doubled, variation in hog prices nearly doubled, and variation in beef prices nearly tripled.

By the same measure, volatility in grain prices declined during the decade of the 1980s compared with the 1970s, as variability in exports declined. Milk, beef, and pork prices were also less volatile. Through much of the 1980s, government-controlled inventories of grains were very large, acreage controls were heavily used, and grain prices were often near the announced price support loan rates. However, the level of price support varied considerably, contributing to price variability. Between 1983 and 1990, price support levels for corn and wheat dropped by over 40 percent. The 1983 and 1988 droughts also added to the volatility.

In the 1990s we have seen government-owned stocks almost eliminated, tighter supply-demand balance in most major crop markets, crop prices generally above support levels, and reduced federal intervention in grain markets, yet the variability in grain and livestock prices has not increased dramatically, with the exception of milk. Again, using the annual coefficient of variation as an indicator, price variability for major commodities during 1990-96 was well below the level of the 1970s and near or below the level of the 1980s, except for wheat and milk where the 1990s' volatility exceeded that of the 1980s by 25 and 50 percent, respectively.

These data, rough as they are, imply that government policy over the past twenty years does not appear to have had a consistent effect on commodity price variability. This is perhaps not surprising given multiple and often conflicting policy objectives, the varied use of acreage and stocks management programs, and increasing globalization. There are times when government policy appears to have increased, decreased, or had little effect on price variability.

The weak case for greater price and income variability following the 1996 Act

The case that greater farm price and income variability can be expected in the present environment may be argued based on two general factors: (1) more fluctuation in underlying sources of variability, such as increased yield variability due to more variable weather or increased frequency of macroeconomic shocks; and (2) the changes in farm policy that enable the underlying sources of variability to have greater effects on farm prices and incomes, regardless of whether the variability of the underlying sources has increased. We are agnostic with respect to the first set of factors, given the number of possible factors and lack of clear evidence which suggests changes in variability. Our concern is with the second set of factors—the recent farm policy changes that may facilitate greater price and income variability. The key policy concerns and why we find them less than compelling are examined below.

The shift to private stockholding and expected reduced stock levels. Under the 1996 Act, government-owned or -controlled inventories are expected to be minimal, raising concerns about the ability of private stockholding to stabilize prices compared with past government storage programs. While this trimming of federal storage programs sounds persuasive for the case of greater

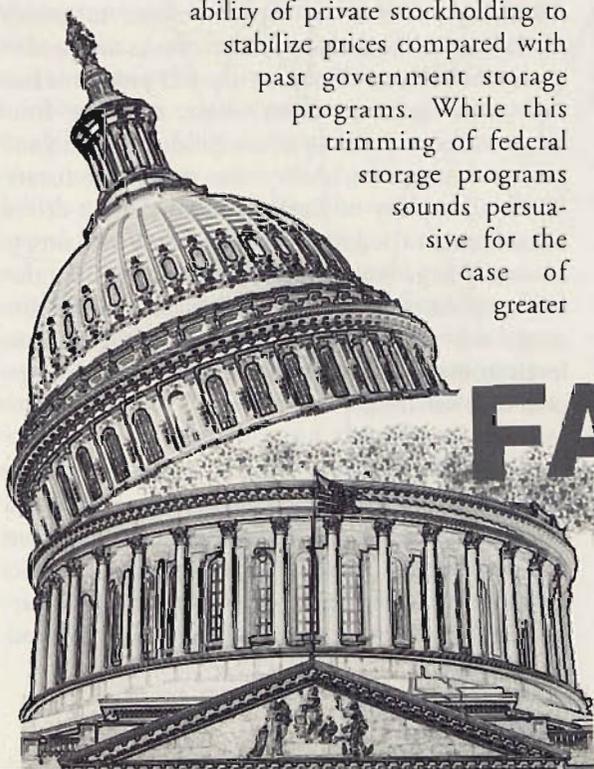
price variability, the execution of these programs has not generated notably stable markets in recent decades, as earlier outlined.

Consider the 1980s. As government-held inventories rose to extraordinarily large levels in the mid 1980s and their rising storage costs and the price-limiting effect became unacceptable, the government tried to reduce stocks first by setting aside cropland and then, in 1985, by reducing price support rates. Stocks were also used for a variety of in-kind payments. These actions, and the 1988 drought, led to large price fluctuations.

Reliance on private stockholding under the 1996 Act may lead to lower total stocks on average, and a lower stocks-to-use ratio, compared with the era of public stockholding and storage incentives, particularly if global food demand rises as fast as some project over the coming decades. However, a smaller level of private stocks under the 1996 Act may be just as stabilizing as a larger level of government stocks under earlier farm legislation. As government stockholding increases, uncertain management policies and reduced private stockholding lower the potential stabilizing effect of government stocks. Also, changes in private stock levels may be more price responsive than changes in government-held or government-subsidized stocks.

Private speculative stocks will be marketed unless expected price gains cover storage costs. However, government-owned stocks have been marketed for diverse reasons, and farmer-owned reserve stocks have also resisted market forces in that market prices had to overcome storage subsidies before producers would release them. One could also expect that improved marketing infrastructure, better communications, data and information, and more open markets around the world make a given level of stocks today more effective in meeting market demand than in the past.

Elimination of production control programs. The 1996 Act eliminated the authority for acreage reduction programs (ARPs). The need for ARPs to balance supply and demand declined following passage of the 1985 farm act and its price support reductions. In 1987, nearly 54 million acres of cropland were idled under ARPs, but less than 5 million acres were idled under ARPs in 1995. If ARP authority had been continued in the 1996 farm bill, it is extremely likely ARPs for all crops would have been zero percent in 1996 and 1997 and very restric-



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tive infrequently in years beyond that. Such production control probably would not significantly reduce volatility in crop prices. In addition, the use of ARPs can contribute to price variability by providing little recourse if expected market conditions change substantially near planting time or by being inconsistent with yields. The 1995 corn crop had

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an ARP of 7.5 percent and the average yield fell to 113.5 bushels per acre that year. Lower yields and an increase in exports were not apparent when the ARP was announced, and corn prices rose 40 percent that year from the previous year.

Decoupled and fixed program payments. The 1996 Act severed the link between payments and the level of market prices, establishing fixed payment rates per production unit for major program crops each year through 2002. Regardless of whether more farm price variability is likely, more income variability would be expected by substituting fixed rates for the previous farm act's deficiency payment rates which increased when market prices declined and decreased when market price rose. On 1996 crops, fixed payments of about \$5.2 billion were provided to program crop producers. Had the previous deficiency payment program been in effect, payments would have amounted to only about \$0.7 billion, given the high prevailing market prices. The larger payments under the 1996 Act raised incomes considerably, in effect increasing income variability.

The expected increase in farm income variability by going to fixed payment rates is likely not great. Several program changes beginning with the 1985 Farm Act reduced the ability of deficiency payments to stabilize incomes by fixing program payment yields, reducing the amount of acreage eligible for payments, and tightening payment limits. In addition, many producers elected not to participate in farm programs, making a large portion of production not covered by payments and a large portion of producers ineligible for them by the early 1990s.

Stabilizing price received through a variable payment rate does not assure stability in a producer's

revenue and income, which depend on prices and yields. The typical offsetting movements between yields and prices provide a "natural hedge" against extreme yield losses at the national level, and variable payment rates may actually make producer gross revenues more variable. The effect of deficiency payments on variability further depends on the degree that producers' yields and prices are correlated with national average yields and prices. Research on individual farm incomes by Glauber and Miranda indicates that deficiency payments increased variation in gross incomes on acreage covering about one-third of corn production and one-quarter of wheat production.

Changes that will promote market stability

In addition to limitations on the variability-increasing factors described above, several developments will likely stabilize farm prices and incomes.

Planting flexibility. The 1996 Act eliminates crop acreage bases and permits producers to plant most crops at any level without losing payments. In response to flexibility and high expected prices, crop plantings in 1996 and 1997 were well above 1995. For example, 1997 soybean plantings were the largest since 1982, bidding area away from crops such as corn, cotton, and soft wheat. The area changes, larger than what likely would have occurred under the previous farm act, are not generating aberrant price behavior but are resulting in 1997/98 average farm prices consistent with the average of the 1990s.

The virtual elimination of planting restrictions should make acreage response more price elastic, which is stabilizing. It could be argued that the old acreage control programs may be more effective in stabilizing prices if the market returns to grossly excess supplies and sharp area cutbacks are needed to restore balance. However, the old programs had their own limits on effectiveness, suffering from nonparticipation, idling of nonproductive land and greater income variability for many producers. While the ability of flexibility and market-driven adjustments to reduce area sufficiently remains to be seen if large crop surpluses emerge, we note that few are predicting pervasive surpluses. On the contrary, it is the expectation of lower stocks-to-use levels in the future that motivates much of the concern over variability.

Trade liberalization. Market access, disciplines on export subsidies, and constraints on domestic price insulation policies have increased globally over the past decade. These changes increase the price responsiveness of import demand and export supply making the export demand for U.S. farm prod-

ucts more price elastic. With more countries participating in trade in larger amounts and in more transparent and price responsive ways in future years, a given shock in supply or demand should be accommodated with smaller price changes.

Adaptation to price and income risk. If the risk environment does change or market participants' attitudes toward risk change, adaptive behaviors would reduce variability in prices received, prices paid, or incomes. For example, producers may manage risks using yield and revenue insurance, not generally available under the previous farm act; options, futures, and forward contracts; marketing assistance loans; private storage and credit markets; and a variety of production and management practices. Adaptive production practices include diversifying production and changing production systems, such as increased irrigation. Genetic engineering will provide varieties that better deal with weather and pests. Adaptive management practices include renting land and alternative ownership arrangements. Today, 40 percent of land used in production is rented, often shifting some risks to landlords and giving operators flexibility to add or subtract land as market conditions change. A farmer's equity may be combined with equity of others, such as partners, contractors, landlords, input suppliers, and processors, which also shifts risks.

Farm price and income variability won't likely be much affected

Our review of past programs, the experience of the 1990s thus far, changes in domestic farm and trade policy, and available risk reduction alternatives lead us to conclude that producers are not likely to face substantially greater price and income variability for major crops and livestock in the 1990s compared with earlier periods, although milk may be an exception for awhile. Similarly, a recent FAO report is inconclusive on the prospect of greater price variability. The 1996 Act includes provisions that, other things being equal, could increase price variability, such as reduced government stockholding, capped loan rates, and marketing assistance loans, and it contains provisions that could reduce price variability, such as increased planting flexibility. The fixed payments, on average, suggest somewhat lower farm incomes when prices are low, but analyses reported in USDA's Senate testimony indicate this may not have much effect on a producer's income

variability.

Lower stocks relative to use are widely expected under the 1996 Act, which implies a potential for greater price variability. However, increased experience with planting flexibility over time, greater trade liberalization and market orientation in foreign countries, and improved communication and flow and processing of information may reduce shocks to the market and make acreage, private storage, and demand more price responsive in the future, thus reducing the potential variability increase that normally accompanies lower stocks. Finally, ample tools exist for producers to shift risk, although shifting risk is done at some cost and requires education and willingness to do so. ■

One could also expect that improved marketing infrastructure, better communications, data and information, and more open markets around the world make a given level of stocks today more effective in meeting market demand than in the past.

■ For more information

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