

**STATEMENT OF KEITH COLLINS
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BEFORE
THE SENATE COMMITTEE ON
AGRICULTURE, NUTRITION, AND FORESTRY**

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Mr. Chairman and members of the Committee, I thank you for the opportunity to discuss volatility in agriculture markets. From the highs during the past 12 months, farm-level wheat prices have dropped 30 percent, corn prices have fallen over 40 percent and milk prices have declined about 25 percent. Declining wheat, corn and milk prices are forecast to reduce 1997 cash receipts for those commodities by over \$6 billion, compared with 1996. These atypically large declines and similar earlier increases in corn, wheat and milk prices, coming shortly after enactment of the Federal Agriculture Improvement and Reform Act of 1996 (1996 Farm Act), have raised concerns that the new farm legislation is contributing to increased price volatility, and consequently income volatility, in major field crop and milk markets and causing financial pressures on some farmers. My goal today is to provide a perspective on how volatility affects agricultural markets, examine the current volatility and its components relative to history, assess the effects of the 1996 Farm Act on volatility and indicate some tools which producers can use to manage price and income volatility.

Implications of Volatility in Agricultural Markets

In a market economy, prices have the important function of signaling how resources should be allocated among competing enterprises. Prices guide farmers in deciding what commodities they should produce, within the limits of their overall resources. Agricultural prices

are inherently more volatile--characterized by rapid change--than most other prices, because the demand for farm products is relatively inelastic, causing prices to change considerably even though there are fairly small changes in production or consumption, and because agricultural production varies greatly depending on the weather.

While some price variability is necessary to signal needed market adjustments in supply and demand, highly volatile prices may be undesirable because they may lead to inefficient resource allocation which imposes costs on the overall economy. From an individual producer's perspective, volatile prices may complicate decisions about short-term production and plans for longer-term resource allocation. However, one cannot generalize about how price volatility may affect individual producers because many factors come into play. Some producers are more risk averse than others, causing them to take actions to cope with price and income variability. Producers who specialize in 1 or 2 commodities usually face greater risk from price and income variability than those with diversified, multi-commodity operations. Producers who are financially solvent may have less concern about the effects of volatile prices than those producers whose operations are financially stressed and may face greater costs for and limitations in credit.

Producers are not the only economic agents who may be affected by farm price volatility. Those who sell farm inputs such as machinery, fertilizer, and chemicals may experience greater variability in sales and increased risks from volatile producer prices and incomes. Farm lenders make lending decisions and set credit terms that reflect volatility in prices and incomes. Those who buy, sell, and process farm products also are affected by volatile farm prices, especially in the case of tight supplies and rising prices that interfere with normal commercial business. To the

extent that farm price volatility is reflected in higher retail food prices, consumers also are adversely affected.

Level of Volatility in Agricultural Markets

Historically, the rapid globalization of U.S. agriculture during the 1970s stands out as a period of extreme volatility in agricultural markets. During that decade, the former Soviet Union began importing large volumes of grain, which sent crop prices surging upward during the early part of the 1970s. Livestock prices also rose during the 1970s as livestock producers responded to record-high grain prices by reducing production. The Federal Government relaxed acreage controls, and producers responded by increasing plantings, causing grain prices to fall considerably by the late 1970s. In addition, volatility in exchange and interest rates also contributed to fluctuations in agricultural markets in the 1970s.

Volatility in grain prices as measured by the coefficient of variation--a statistic that is the standard deviation of annual farm prices divided by the average price--more than doubled for wheat, corn and soybeans during the 1970s, compared with the decade of the 1960s (table 1). The volatility in milk and livestock prices also surged in the 1970s (table 2). The variation in milk prices more than doubled, variation in hog prices nearly doubled and variation in beef prices nearly tripled.

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 and the Federal Government continually used acreage controls in attempts to balance supply and demand. Grain prices tended to be near the announced price support loan rates for most of this decade.

However, the level of price support varied considerably during the 1980s, as Congress first elected to raise rates and then reduce rates under the Food Security Act of 1985 (the 1985 Farm Act) and other legislation. From 1983 to 1990, price support levels for corn and wheat dropped by over 40 percent, making U.S. grain more competitive in world markets but also contributing to the volatility in grain prices during the decade of the 1980s. The 1983 and 1988 droughts also added to the volatility. Consequently, even though surpluses were large during much of the decade, corn price volatility in the 1980s exceeded that in the 1950s and 1960s.

Despite reduced Federal intervention in grain markets, the level of volatility in grain and livestock prices has not increased dramatically thus far in the 1990s. The coefficient of variation in wheat prices is less than one-half of the 1970s but about 25 percent greater than in the 1980s, while the coefficient of variation in corn prices is below the levels of the 1970s and 1980s. Soybean prices also have been less variable in the 1990s than in the 1970s and 1980s. Livestock prices have been much less variable in the 1990s than in the 1970s and are exhibiting about the same amount of variation in the 1990s as the 1980s. Milk prices in the 1990s are about 50 percent more variable than in the 1980s, but variability in milk prices in the 1970s was 4 times that exhibited so far in the 1990s.

Sources of Volatility in Agricultural Markets

Variation in crop and livestock prices from year-to-year is caused by many factors, including weather, crop disease and pests, U.S. and foreign government policies and programs, and macroeconomic conditions. Weather and crop disease and pests affect crop yields and production both domestically and abroad. Changes in crop production abroad can lead to variation in crop prices by altering the demand for U.S. crops in world markets. Macroeconomic

variables, such as exchange rates, income growth, inflation and interest rates can also affect the demand for agricultural commodities, the prices received by producers, farm production costs and the incomes of farmers.

The key to understanding changes in crop prices is the “balance sheet.” The balance sheet for a commodity is an accounting of stocks, production, domestic use and exports for a commodity. USDA revises the balance sheet for each commodity monthly. Figures 1-4, illustrated for corn, demonstrate that the annual balance sheet does a pretty good job explaining price fluctuations, and the monthly balance sheet forecasts do a very good job explaining futures prices. The upshot is that supply and demand fundamentals explain the price changes of the 1990s. The following sections examine those fundamentals more closely.

Crop Yields. During the 1990s, U.S. weather has been generally wetter than average, especially during the summer months. Rainfall has varied from near average to extremely wet, with a notable absence of extreme summer drought. Temperatures generally have been cooler than average with only isolated cases of hot summer weather. The only drought in the 1990s with a significant effect on national production occurred in the Southwest and Southern Plains during the fall of 1995 and the spring of 1996.

So far in the 1990s, the variation in crop yields appears to have been less than in recent decades. The coefficient of variation in wheat yields has been about 5 percent in the 1990s, compared with over 6 percent in the 1970s and 1980s, 7 percent in the 1960s and over 17 percent in the 1950s. Corn yields have exhibited less variability in the 1990s than in the 1950s, 1960s, 1970s and 1980s, and soybeans yields have been less variable in the 1990s than in the 1970s and 1980s.

Whether there has been an increase in the variability of yields can also be assessed by comparing actual yields with trend yields and looking at the number of large deviations from trend, or “outliers” (figures 5-8). Deviations from the long-run trend of more than 10 percent were considered to be outliers. Looking at corn yields, the 1950s were much more variable than the 1960s--nine outliers compared to two. There were three outliers in the 1970s and 5 in the 1980s. The first seven years of the 1990s show three outliers. Compared to earlier decades, the 1990s do not show an unusually large number of outliers for soybeans, corn and wheat, or for cotton.

Crop Production. A decline in U.S. yields in any year can be offset by an increase in acreage, leading to fairly stable production. In contrast, changes in both acreage and yield can go in the same direction, leading to large annual changes in crop production. While the Federal Government has used acreage controls only sparingly during the 1990s to manage production and the Food, Agriculture, Conservation, and Trade Act of 1990 (1990 Farm Act) and 1996 Farm Act provided producers with increased planting flexibility, the annual variation in grain production has not increased and remains similar to earlier periods. For example, the coefficient of variation for U.S. wheat production has been about 9 percent in the 1990s, compared with 14 percent in the 1980s and 15 percent in the 1970s. The variation in corn production in the 1990s also has been lower than in the 1970s and 1980s. In contrast, the variation in soybean production in the 1990s is above that for the 1980s but nearly one-half the variation of the 1970s.

Exports. The surge in U.S. grain exports in the early 1970s contributed to the variation in grain prices during that decade. In the 1990s, wheat and corn exports have been less volatile than in any decade beginning in the 1950s. The variation in soybean exports has been slightly higher in

the 1990s than in the 1980s but less than in 1970s and 1960s. Thus, it would appear exports are contributing to less of the variation in grain and oilseed prices than in earlier decades.

Increasing globalization exposes U.S. agriculture to additional market shocks such as foreign crop conditions, changing government policies and exchange rates. While globalization increases the potential for greater price variability, the reduction of market barriers and continued trade liberalization allow potential market shocks to be spread among more countries. Increased import access provided under the Uruguay Round agreement will likely dampen the effects of prices caused by a shortfall in domestic production. Just as the ripple effects of a disturbance are smaller in a lake than a pond, the market effects of a production shortfall in a major global player are smaller the greater the number of countries across which the effects are spread.

Stocks. For major crops, stocks are a key factor influencing prices. Farm prices are generally inversely related to the stocks-to-use ratio; that is, the tighter stocks are relative to use, the higher are average farm prices, and vice versa. Also, the tighter stocks are relative to use, the more variable are prices in response to changes in production or export demand. For example, when stocks are tight an increase in demand cannot be completely met by drawing down stocks; demand must be rationed through price increases.

Throughout much of the forty-year period since 1950, the Federal Government held or controlled substantial inventories of grains. It might be expected that inventories vary to fulfill a price stabilizing function. While in some years, these inventories were drastically reduced to counter the effects of reduced production, it appears variation in inventories only partially contributed to reduced variation in crop prices. For example, both corn stocks and prices have

been less variable so far in the 1990s than in the 1980s, but wheat stocks have been less volatile in the 1990s than in the 1980s while wheat prices have been more volatile.

Volatility and the 1996 Farm Act

Some perceive that the 1996 Farm Act will lead to increased volatility in grain and milk markets. It is generally argued that increased planting flexibility, fixed payments and the elimination of annual acreage reduction programs (ARPs) and the Farmer-Owned Reserve (FOR) will contribute to more volatility in grain prices, while phasing out the price support purchase program for milk will increase volatility in milk markets. Each of these factors are examined below. Despite these changes, it is uncertain whether prices will be more variable under the 1996 Farm Act. Government policy over the past 20 years cannot be shown to have had a consistent effect on crop price variability. This is perhaps not surprising given multiple policy objectives, the varied use of the principal tools of acreage and stocks management and increasing globalization. There are times when government policy appears to have increased, decreased, or had little effect on price variability.

Planting Flexibility. Planting flexibility enables all producers to respond to market conditions. This year, producers increased plantings of soybeans by about 10 percent to nearly 71 million acres, the largest soybean area since 1982, because of expectations of strong soybean prices. The increase in plantings is expected to cause soybean prices to average about \$6 per bushel in 1997/98, compared with \$7.35 expected for 1996/97.

Prior to enactment of the 1996 Farm Act, producers participating in annual farm programs could shift 15 percent of their program crop base acreage to oilseeds and other alternative crops

with no reduction in government payments. In 1995, program crop acreage bases on farms enrolled in commodity programs totaled about 166 million acres, or producers could plant alternative crops on at most 25 million acres without losing payments. In 1995, producers planted soybeans on about 5 million acres enrolled as crop bases for wheat, feed grains, upland cotton and rice, and soybean plantings totaled 62.6 million acres.

The 1996 Farm Act's planting flexibility provisions probably increased soybean acreage by 4-6 million acres in 1997 and may have reduced plantings of other crops, such as corn, cotton and soft wheat, by a similar amount. It remains unclear whether the large shift in acreage to soybeans this year will result in prices and net returns for soybeans that are considerably lower than for competing crops. The Department currently projects that soybean and competing crop prices and returns in 1997/98 will not be radically out of line with prior years. While the soybean plantings exceeded virtually all analysts' forecasts this year, experience with flexibility should improve predictability in future years. And, although some producers may over react to changes in expected prices during the next few years, experience with nonprogram crops suggest that as a whole farmers tend not to make large shifts in acreage between crops in any one year. Over a relatively short period, such as 1-5 years, the lack of specialized machinery and equipment may prevent some producers from shifting to alternative crops. Despite the large increase in soybean plantings this year, it does not appear the increase in planting flexibility provided by the 1996 Farm Act is contributing to the volatility in grain and oilseed prices. On the contrary, the elimination of restrictions should make acreage response more price elastic, which is stabilizing.

Elimination of ARPs. The 1996 Farm Act eliminated the authority for ARPs. The need for ARPs to balance supply and demand declined following passage of the 1985 Farm Act and the

implementation of market-driven price support loan rates. 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 the Secretary would have set ARPs for all crops at 0 percent in 1996 and 1997.

Looking beyond the current year, it is likely ARPs would have been set above 0 percent only on rare occasions--when market prices turn out to be much weaker than projected. This limited use of ARP authority to control production probably would not reduce volatility in crop prices significantly. In addition, the use of ARPs could contribute to price volatility. Previous farm legislation restricted when ARP levels could be announced and provided little recourse if market conditions changed substantially prior to planting. An ARP greater than 0 coupled with a lower-than-normal yield could destabilize production and prices. For example, an ARP of 7.5 percent was announced for corn in 1995 and the average yield fell to 113.5 bushels per acre that year. Lower production and an increase in exports, mainly due to China and was not apparent when the ARP was announced, caused the market price for corn to increase from \$2.26 per bushel in 1994/95 to \$3.24 in 1995/96.

Fixed Payments. The 1996 Farm Act severed the link between payments and the level of market prices. Instead, fixed payments were established for wheat, feed grains, rice and upland cotton each year through 2002. Payment rates vary from year-to-year averaging \$0.33 per bushel for corn, \$0.61 per bushel for wheat, \$0.072 per pound for upland cotton and \$2.57 per cwt. for rice during 1996/97-2002/03. Payment rates under the 1996 Farm Act will exceed those under the previous target price/deficiency payment program if the market price for corn averages above \$2.42 per bushel, wheat averages above \$3.39 per bushel, upland cotton averages above 65.7

cents per pound and rice averages above \$8.14 per cwt. during 1996/97-2002/03. If market prices average below these levels, the target price/deficiency payment program that was in place in 1995/96 would have provided larger payments to producers than the fixed payments provided by the 1996 Farm Act.

In 1996/97, fixed payments of about \$5.2 billion were provided to wheat, feed grain, upland cotton and rice producers. However, market prices were above or very near the target prices established under previous legislation. Under the previous target price/deficiency payment program, deficiency payments to wheat, feed grain, upland cotton and rice producers would have amounted to about \$0.7 billion in 1996/97.

The much larger payments provided to producers in 1996/97 under the 1996 Farm Act's fixed payments provisions raised incomes considerably above expected norms, in effect, increasing income variability. For example, wheat producers received an average price of \$4.35 per bushel in 1996/97 and about \$5.20 per bushel after including the 1996 Farm Act's fixed payments. Over the previous 5 years, wheat prices averaged \$3.50 per bushel and producers received, on average, about \$0.60 in deficiency payments on all production for a total of about \$4.10 per bushel.

A primary goal of the target price/deficiency payment program was to help to stabilize the incomes of wheat, feed grain, rice and upland cotton producers. Deficiency payment rates, reflecting the difference between an established target price and the average price received by all producers, increased when market prices declined and decreased when market price rose. This counter-cyclical movement in deficiency payment rates was envisioned as a way of stabilizing incomes.

Several program changes beginning with the 1985 Farm Act reduced the ability of deficiency payments to stabilize incomes. The 1985 and 1990 Farm Acts fixed program payment yields and the 1990 Farm Act reduced the amount of acreage eligible for payments. In addition, many producers often elected not to participate in farm programs even though ARPs were set at 0 percent because of planting restrictions and other program requirements. As a result, a large portion of production was not covered by payments and a large portion of producers were ineligible to receive payments by the early 1990s. In 1995/96, about 34 percent of corn production and about 60 percent of corn producers were ineligible for payments. The 1996 Farm Act's fixed payments, reduced planting restrictions and one-time sign-up increased producer participation, reducing the proportion of production and producers ineligible for payments. In 1996/97, 24 percent of corn production and 11 percent of corn producers were ineligible for payments.

A common opinion is that severing the link between payments and market price will lead to greater volatility in farm income. But, crop producers face both price and yield risks. Stabilizing price received does not assure stability in producer revenues or income. Furthermore, national prices and yields tend to move in opposite directions--a low (high) yield tends to result in a high (low) price. These offsetting movements provide a "natural hedge" against extreme yield losses at the national level. Thus, attempting to stabilize incomes through direct payments or other forms of price stabilization may actually make producer gross revenues more variable.

There may be little correlation between year-to-year changes in yields of individual producers and changes in yields nationally. For instance, a producer could have a bumper crop while a drought in another part of the country could result in a large reduction in yields nationally.

For both the producer with a bumper crop and the producer whose crop was severely affected by drought, deficiency payments may do little to stabilize income. The income of the producer with a bumper crop would increase from the previous year because of the increase in yield and price, even though payments would decline. In contrast, the income of the producer affected by drought would likely decline substantially, because the producer would have little to sell at the higher price and payments would be reduced. Thus, deficiency payments may have had only limited effect on farm revenue and may have actually destabilized revenues for some producers.

According to research results from the Economic Research Service, deficiency payments reduced revenue risk by an average of about 20 percent for U.S. corn producers. But because deficiency payments were made when national average prices for program crops were low--and not necessarily when the revenue for an individual farm was low--revenue fluctuations from year-to-year were not dampened significantly for some farms, and not at all for others. Research 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.

We developed a stochastic model for this testimony to study the income variability effects of the 1996 Farm Act's fixed payments, compared with the target price/deficiency payment program, for individual corn producers. The model results are based on a 300-acre corn farm with a program yield equal to the U.S. average of 103 bushels per acre and an expected yield of 130 bushels per acre. Government payments under the 1996 Farm Act equal the average payment rate of \$0.33 per bushel for the 1996/97-2002/03 crops times program payment production ($.85 \times 300 \times 103$) plus any projected marketing loan payments. Two expected price scenarios for corn were simulated, \$2.25 and \$2.50 per bushel. In each simulation, national and the individual

corn producer's yields were randomly selected and national prices were reestimated based on the national yield, resulting in a distribution of prices around each expected price. The producer's deficiency payments, market receipts and gross revenue were based on the model's simulated prices.

The stochastic model results indicate the expected income of a 300-acre corn producer would be \$4,300 higher under the target price/deficiency payment program if the market price is expected to be \$2.25 per bushel (table 3). If the market price is expected to be \$2.50 per bushel, the corn producer's expected income would be \$1,760 higher under the 1996 Farm Bill's fixed payments. The variability in farm income also depends on the level of expected market prices and the degree to which the individual producer's price and yield are correlated with the national price and yield. If the producer's price and yield are highly correlated with national prices and yields, fixed payments result in less volatility in producer income than deficiency payments at an expected market price of \$2.25, but deficiency payments result in less variability in income at an expected market price of \$2.50. If a producer's yields are uncorrelated with national yields, deficiency payments reduce the variation in gross income at both an expected price of \$2.25 and \$2.50. If the producer's price is uncorrelated with national prices, fixed payments reduce the volatility in producer income, compared with target price/deficiency payments.

Government and Farmer-Owned Reserve (FOR) Stocks. Prior to enactment of the 1996 Farm Act, government-held stocks amounted to less than 1 percent of total use for corn and about 5 percent of total use for wheat, most in the Food Security Wheat Reserve. Under the 1996 Farm Act, government-held inventories are expected to decline further because of the Act's cap on price support rates, marketing loan provisions, elimination of the FOR, and limits on the

Disaster Reserve. The implied reduction in market intervention has raised concerns about the ability of stockholding to stabilize prices. Will private stockholding result in greater price volatility than public stockholding?

The Federal Government during much of the 1980s held substantial quantities of corn and wheat in inventory. The accumulation in inventories became especially burdensome in the mid-1980s, as high price supports encouraged producers to forfeit grain pledged for loan collateral to the Commodity Credit Corporation (CCC). The Federal Government tried to manage these inventories by requiring producers to idle cropland. In the 1985 Farm Act, Congress reduced price support rates and commodities held by the government were used as in-kind payments to producers to cover deficiency, cropland diversion and FOR storage payments. After only a few years, government-held stocks had been almost entirely eliminated. Large acreage reduction programs and the 1988 drought helped to hasten the decline in government-held stocks in the mid to late 1980s. This combination of acreage control, price support reductions and stocks disposal was not particularly price stabilizing, as indicated in table 1.

Many producers would like public stocks to support prices, not cap them, by removing stocks from the marketplace when prices are low and for the Federal Government to keep those stocks isolated when prices are high. A further complication is that there is no hard and fast rule for deciding when prices are above or below typical norms. Developing and following operating rules that are clearly understood and supported by the public and Congress would likely make government-held stocks more responsive to changes in market conditions.

Reliance on private stockholding under the 1996 Farm Act may lead to lower total stocks held on average compared with the era of public stockholding and storage incentives. Whether

this increases price volatility depends on whether production and demand will be more variable in the future. Yield variability is uncertain but export demand variability may decline as more nations participate in the World Trade Organization and pursue market orientation.

Even if yield and export variability remain unchanged, a smaller level of private stocks under the 1996 Farm Act may be just as stabilizing as a larger level of government stocks under earlier Farm Acts. First, as government stockholding increases, private stockholding declines, reducing the potential stabilization effect of government stocks (the so-called substitution effect). Second, changes in private stock levels (the “supply of storage”) may be more price responsive than changes in government-held or government-subsidized stocks. Third, acreage levels may now be more price responsive due to planting flexibility and, fourth, export demand may now be more price responsive due to trade liberalization. As storage, production, and demand become more price responsive, or elastic, market price variability is reduced.

Dairy Program. The 1996 Farm Act steadily reduces the price support level for milk through 1999. On January 1, 2000, the price support purchase program is replaced with a commercial processor recourse loan program. Over the past 12 months, wide swings in monthly milk prices and feed costs have raised concerns about what can be done to reduce the volatility in producer income under the authorities provided in the 1996 Farm Act. The Secretary recently sent a letter to the Chairman and other congressional members assessing the Department’s current authorities for addressing volatility in milk markets and some additional administrative and legislative options. I would refer members of the Committee to the Secretary’s letter dated July 9, 1997.

Tools for Managing Volatility

Producers have many tools at their disposal to manage risk. These tools include yield and revenue insurance; options, futures and forward contracts; marketing assistance loans; private storage and credit markets; and a variety of marketing and production practices. Examples of marketing and production practices include diversifying the mix of crops planted, using seed varieties that are less prone to disease and drought, relying on market information and market consultants to develop comprehensive marketing plans, and using other techniques or practices to reduce price and income risk.

Yield and Revenue Insurance. The Department has been helping to insure producers against yield risk for nearly 60 years. As farm policy has become more market oriented, producers are now relying more on insurance. Since the early 1990s, the number of acres insured by multiple-peril crop insurance has more than doubled. In 1996, the Department began offering Income Protection (IP) and reinsuring and subsidizing Crop Revenue Coverage (CRC) policies. Both CRC and IP provide revenue protection based on price and yield expectations. However, CRC also contains “replacement cost coverage” to protect the policyholder against losses when market prices increase.

On average, CRC premiums are significantly higher than IP premiums. The higher cost is due in part to the higher price that is used to pay losses. In addition, IP coverage is based on all of a producer’s acreage in a county, while CRC allows producers to subdivide their acreage into smaller “units,” as defined in their policies.

The Department has been expanding the counties and States eligible for CRC and IP coverage. On May 30, 1997, the Department announced that CRC for wheat had been approved

for 25 additional States beginning this fall. Seven States plus selected counties in 2 other States had previously been approved for CRC for wheat. In addition, IP coverage for wheat and other crops were expanded and pilot programs announced for canola, pecans, almonds and sweet potatoes.

Insurance has emerged as the fundamental safety net for the future. Efforts need to be made to improve existing programs and to expand coverage, where possible, to livestock and dairy producers.

Options, Futures and Forward Contracts. Options, futures and forward contracts can be very effective risk management tools. Forward contracting usually assures producers a specific price and a market for their product. However, forward contracting often does not provide producers with the opportunity to gain if prices increase. Futures hedging ensures a highly competitive price, but requires access to credit if prices rise before harvest.

Put options provide protection against price declines without completely eliminating opportunities to gain from price increases and do not require access to credit if prices rise before harvest. Buying put options gives farmers the right, but not the obligation, to sell a futures contract at a specific price. This is a very powerful tool for producers to stabilize prices. For example, in April, a wheat producer could have purchased a \$4.20 per bushel put options contract for July 1997 new-crop, soft red winter wheat for \$0.15, essentially locking in a price of at least \$4 per bushel (not including the basis). With the July contract going off the board at about \$3.40 per bushel, the producer would have netted about 60 cents per bushel by purchasing the put option.

These markets continue to evolve, offering new mechanisms for protection, such as yield contracts introduced two years ago. Currently, approval of trade options is under discussion. Exchange and off-exchange derivatives, such as forwards, offer producers an excellent opportunity to reduce income variability. Marketing and production contracts, heavily used in poultry and fruit and vegetable production are also growing. However, producers need information and education to use these tools willingly and in a way that reduces their risks.

Marketing Assistance Loans. The 1996 Farm Act capped loan rates at their 1995 levels for program crops and increased the interest charged by the CCC on marketing assistance loans by 100 basis points. Despite these changes many producers continue to use these loans as a marketing tool. In 1996/97, wheat producers placed 194 million bushels of wheat under loan, only slightly below the average for the 1991-95 crops of 197 million bushels. Loan placements for corn totaled 970 million bushels in 1996/97, nearly 20 percent below the previous 5-year average. Loan placements in 1996/97 amounted to about 10 percent of crop production for both corn and wheat in 1996/97.

Adaptive Production Management

Producers may also reduce volatility risks by diversifying production and changing production systems, such as increased irrigation. Genetic engineering may provide a wide array of varieties that better deal with weather and pests. Changing farm management practices may also be used to spread risk and increased flexibility. For example, 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. Increasingly, a farmer's equity is being

combined with equity of others, such as partners, landlords, input suppliers, co-owners (contractors) and processors which also shifts risks.

Education, Research and Market Information

Since the mid-1980s, the Federal Government has gradually reduced the level of intervention in commodity markets. While this move to a more market-oriented agriculture may increase price and income volatility, there exist opportunities for producers to use existing risk management tools more effectively and for the development of new risk management tools. More research is needed to determine what types of currently available tools and strategies are most useful to producers and how education can best be designed to help producers use these risk management strategies. In June, Secretary Glickman announced that the Department would convene a meeting later this summer that would include leaders of producer and agribusiness groups, and the research, academic and cooperative extension system communities to help focus current and planned research and education initiatives to address risk management strategies, contracting, strategic planning and decision making. That meeting is now set for September 16 and 17 in Kansas City. It will initiate the public outreach of the Department's Risk Management Education Initiative. About 700 participants are expected to attend.

Accessible and accurate market information is critical for sound decision making at all levels of the marketing system. The Department has been a leader in providing accurate, accessible and timely information on agricultural markets. Some argue that providing market information is best left to the private sector. There are many private firms providing market information on agricultural markets, but USDA reports remain the primary source for much of the market information being marketed by private firms. The basic balance sheet and other

information provided by USDA helps to separate fact from fiction and provides all participants in the marketplace equitable access to unbiased market information. Despite continued budgetary pressures, the Department must make every effort to maintain the high quality of its commodity market information program.

Conclusion

The data examined for this testimony indicate there is no clear evidence that price volatility has been substantially greater in the 1990s than in earlier periods for major crops and livestock. The 1996 Farm Act includes provisions that, other things equal, could increase price variability, such as reduced government stockholding and capped loan rates and marketing assistance loans, and 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 and provide slightly less income variability for a producer when the farm's yield moves in the same pattern as national yields.

Lower stocks relative to use are widely expected under the 1996 Farm 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 information flows and processing may reduce shocks to the market and make supply 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. However, shifting risk is costly and requires education and willingness to do it effectively.

Mr. Chairman that concludes my testimony and I'll be happy to respond to any questions.

Table 1. Coefficients of Variation for U.S. Wheat, Corn and Soybeans (%).

Time Period	Acreage	Yield	Production	Exports	Stocks	Price	Market Value	Gross Income
Wheat:								
1950-59	16.6	17.2	15.7	27.8	37.0	6.7	13.9	13.9
1960-69	8.9	7.1	11.2	14.1	34.1	18.2	10.6	9.3
1970-79	16.4	6.4	15.3	22.0	35.1	38.1	44.2	34.4
1980-89	9.9	6.5	13.8	19.1	34.8	15.3	22.3	12.8
1990-97	3.9	4.9	9.3	10.7	27.4	18.8	16.3	10.7
Corn:								
1950-59	4.8	13.4	11.7	36.5	36.5	15.2	8.4	8.4
1960-69	7.6	13.7	11.4	22.6	29.8	6.3	12.2	16.3
1970-79	8.5	12.9	18.7	39.9	54.1	29.0	35.7	31.7
1980-89	11.4	14.0	21.2	19.0	52.9	20.6	21.5	9.9
1990-97	4.5	10.7	16.0	17.1	42.8	14.4	16.8	15.4
Soybeans:								
1960-69	19.3	5.6	24.0	36.5	91.5	7.3	26.2	26.2
1970-79	16.8	8.4	24.4	26.8	54.8	27.7	42.9	42.9
1980-89	7.2	10.4	10.3	17.4	35.8	17.1	10.7	10.7
1990-97	6.7	7.9	13.2	18.3	29.3	10.9	17.7	17.7

Table 2. Coefficient of Variation for U.S. Livestock Prices (%).

Time Period	Milk	Beef	Hogs
1950-59	6.9	23.4	15.3
1960-69	11.7	10.7	16.9
1970-79	25.6	30.3	29.5
1980-89	4.3	9.3	9.7
1990-97	6.0	8.7	12.8

Table 3. Mean and Standard Deviation in Governments, Market Receipts and Gross Income for a 300 Acre Corn Farm.

		Expected Market Price of \$2.25			Expected Market Price of \$2.50		
		Government Payments	Market Receipts	Gross Income	Government Payments	Market Receipts	Gross Income
Case 1. Producer's and National Price Highly Correlated/Producer's and National Yield Highly Correlated							
Fixed Payments Mean		9,978	87,356	97,334	8,711	97,118	105,829
Std. Deviation		3,136	3,576	2,162	224	3,037	2,936
Deficiency Payments Mean		14,378	87,356	101,734	6,953	97,118	104,071
Std. Deviation		7,887	3,576	4,364	5,232	3,037	2,241
Case 2. Producer's and National Price Highly Correlated/Producer's and National Yield Not Correlated							
Fixed Payments Mean		9,863	87,792	97,655	8,707	97,554	106,260
Std. Deviation		2,843	9,418	7,945	200	9,680	9,611
Deficiency Payments Mean		14,263	87,792	102,055	6,948	97,544	104,502
Std. Deviation		7,643	9,418	5,215	5,221	9,680	6,234
Case 3. Producer's and National Price Not Correlated/Producer's and National Yield Highly Correlated							
Fixed Payments Mean		9,978	87,845	97,822	8,711	97,606	106,318
Std. Deviation		3,136	9,577	11,281	224	9,848	9,898
Deficiency Payments Mean		14,378	87,845	102,222	6,953	97,606	104,559
Std. Deviation		7,887	9,577	15,110	5,232	9,848	13,308
Case 4. Producer's and National Price Not Correlated/Producer's and National Yield Not Correlated							
Fixed Payments Mean		9,863	87,792	97,655	8,707	97,600	106,307
Std. Deviation		2,843	9,418	10,032	200	9,728	9,727

Deficiency Payments								
Mean	14,263	87,792	102,055	6,948	97,600	104,548		
Std. Deviation	7,643	9,418	12,253	5,221	9,728	11,041		