



Dennis Shields

Falling Prices & National Farm Policy: The Northern Great Plains

Fluctuating crop prices and farm incomes can affect the economic well-being of rural communities and even entire regions, particularly those highly dependent on agriculture and where livestock and crop producers have strong linkages to other sectors. Here the scope and design of national farm policy have significant ramifications beyond the farm gate, and Federal farm program payments can affect various sectors of the economy differently.

One such highly dependent region is the Northern Great Plains—Kansas, Nebraska, and North and South Dakota—where farm production and food processing sectors account for \$49 billion (one-fifth of total regional output) and 308,000 jobs (almost one-tenth of regional employment). Almost 90 percent of total crop acreage in the region (according to the 1997 Census of Agriculture) is devoted to wheat, feed crops, and oilseeds, whose prices dropped from very high levels in 1995 to very low levels in 1999 and 2000. This triggered marketing loan benefits (MLBs—loan deficiency program payments and marketing loan gains) and emergency market loss assistance payments (MLAs) during 1998-2000, that

both propped up farm income and generated spillover effects throughout the Northern Great Plains economy.

This article explores the effects on the Northern Great Plains of the downturn in commodity prices and of the farm program response. Specifically, how did MLBs and MLAs contribute to regional welfare when commodity prices dropped? The article assesses the impact of trends in income, land values, and government payments on the Northern Great Plains economy, and highlights agriculture's strong linkages to other sectors in the region.

This examination illustrates a farm program conundrum facing economists and regional policymakers. Lump-sum income

transfers such as MLAs promote economic efficiency because they are mostly decoupled from production decisions. However, they fail to mitigate the large sectoral dislocations induced by a downturn in commodity prices. On the other hand, MLBs affect farm-level decisionmaking by subsidizing farmers' net returns. These programs enjoy widespread political support because they afford income protection by insulating production decisions from commodity price signals.

Federal Payments Counter Effects of Falling Prices

Agriculture and agriculture-related industries in the Northern Great Plains have a strong regional and national presence. The region's four states produce a quarter of total U.S. wheat, one-eighth of feed crops, and one-sixth of livestock. Its meat processing activities account for almost one-fifth of total U.S. production of meat products. Meat, food grains, and other food processing sectors represent the major forward linkages from this region's agricultural production.

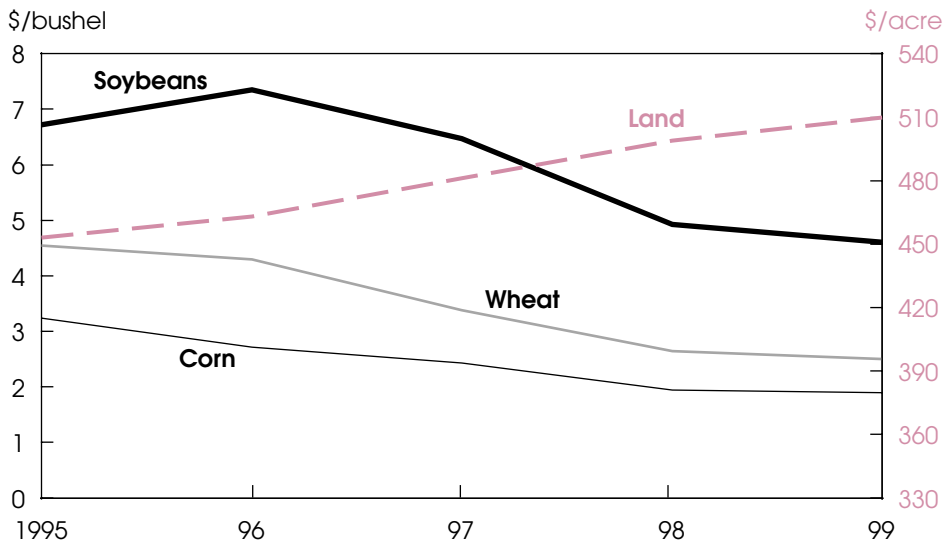
The Asian financial crisis in the late 1990s precipitated a drop in world demand for U.S. agricultural exports. Also, global commodity supplies expanded in response to record-high commodity prices in the 1995/96 marketing year. Abundant worldwide harvests in subsequent years continued to exert downward pressure on commodity prices and added to world and U.S. stocks. Wheat, corn, and soybean prices fell, on average, by 20-30 percent during 1997-99, and crop cash receipts for Northern Great Plains producers fell from \$13 billion in 1997 to less than \$10 billion in 1999.

Throughout this period, net cash income for the region fluctuated between \$6 billion and \$7 billion. All the while, land

The regional computable general equilibrium model used here is based on a 37-sector aggregation of economic activity for the Northern Great Plains States and is constructed from the 1996 IMPLAN state-level database. These results provide information on ballpark magnitudes of sectoral and economywide adjustments in the medium run (3-5 years) independent of outside influences. In this discussion, the term "production" is a revenue flow variable—not a measure of physical quantities produced. This is a common convention in regional and macroeconomics and allows comparison of changes in production among food and nonfood sectors of the economy.

Policy

In Northern Great Plains, Land Prices Rose Even As Crop Prices Fell



For crops, U.S. average farm price for crop year. Average land price on January 1. Source: National Agricultural Statistics Service, USDA.

Economic Research Service, USDA

values for cropland in the Northern Great Plains rose 10 percent, or about 3 percent annually—about the rate of inflation.

The fact that regional farmland prices rose during this period while commodity prices fell so drastically—pushing down crop cash receipts—is explained in large part by the sudden and substantial rise in government payments to Northern Great Plains producers during calendar years 1998-99. Prior to these years, the ratio of government payments to crop cash receipts was unchanged, and government payments as a share of net cash income remained constant. In 1998, marketing loan benefits rose sharply when prices fell below government commodity loan rates, and eligible producers also received emergency market loss assistance payments authorized by Congress.

Receipt of MLBs and MLAs almost doubled the region’s ratio of government program payments to crop cash receipts as well as the program payment share of net cash income. In 1999, government payments accounted for three-fifths of farmers’ net cash income in the Northern Great Plains, and the ratio of government payments to this region’s crop cash receipts reached almost 50 percent. This cash infusion prevented net cash income from sink-

ing to levels experienced during the farm financial crisis of the 1980s. Federal relief propped up farm income and even exerted upward pressure on regional farmland prices as the 1990s drew to a close, unlike the 1980s plunge in farmland prices.

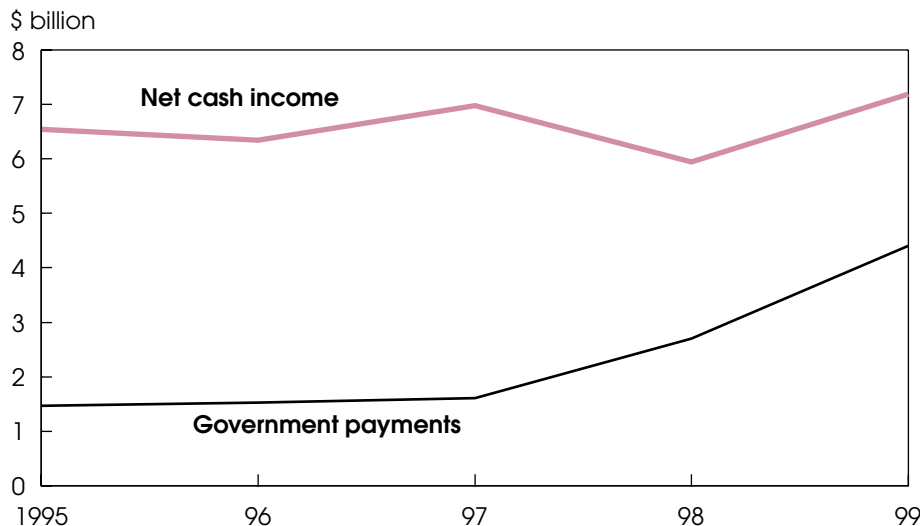
Model Estimates Sector & Regional Impacts

While some farm-level impacts of MLBs and MLAs can be observed, assessing their effects on the regional economy requires using a regional economywide model. Four hypothetical “what if” scenarios are simulated and compared to a base scenario of the Northern Great Plains economy at an initial equilibrium. The analysis of these scenarios represents a way of systematically exploring their different impacts on the regional economy.

The scenarios are:

- **Base:** Northern Great Plains economy in equilibrium using 1996 data.
- **No MLAs or MLBs:** commodity prices drop by 20-30 percent but there are no MLAs or MLBs.
- **Both MLAs and MLBs:** commodity prices drop by 20-30 percent and producers receive both MLAs and MLBs at 1999 levels.
- **MLAs only:** commodity prices drop by 20-30 percent and producers only receive MLA payments at 1999 levels.
- **MLBs only:** commodity prices drop by 20-30 percent and producers only receive MLBs at 1999 levels.

Government Payments Increased As Share of Farmers' Net Cash Income In Northern Great Plains



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In these scenarios, the largest share of the \$1.6 billion in MLBs in 1999 goes to feed crop producers, followed by oilseed and wheat producers. While actual market prices reflect supply and demand, farmers view MLBs as a component of expected prices (see *AO*, October 2000).

MLAs represent after-the-fact lump-sum transfers to producers based on acreage enrolled under Production Flexibility Contracts. MLA payments of \$1.3 billion made in 1999 were adjusted to account for the shift in acreage from wheat and feed grains to oilseeds during 1996-99 and for additional relief supplied to oilseed producers in 1999. Since the payments were authorized toward the end of the 1999 fiscal year, it was assumed they did not affect prior planting decisions made by producers. Not examined were the effects of Conservation Reserve Program and Production Flexibility Contract payments, since they did not represent direct responses to low prices.

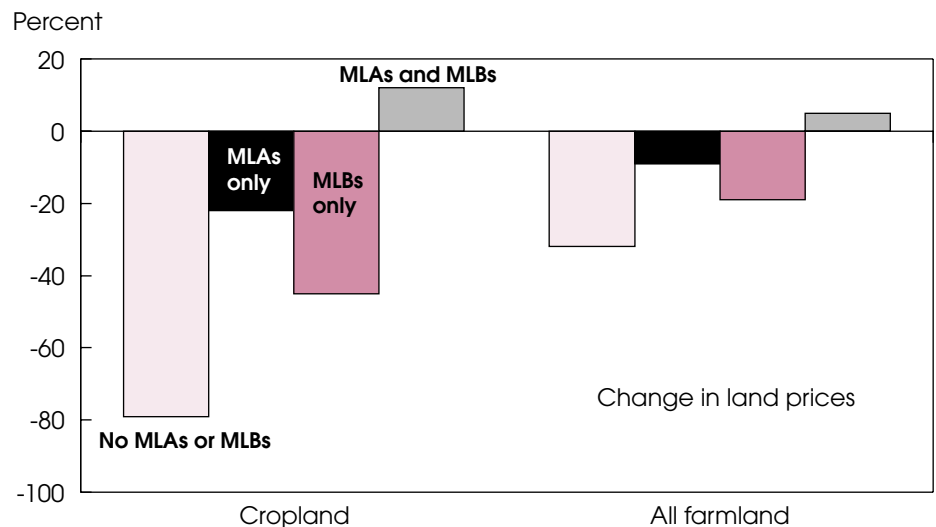
Finally, results from these simulations represent how the regional economy would adjust over a 3-5-year period independent of other outside influences or events.

Without Government Payments, Falling Prices Would Have Jolted Regional Economy

Model results of the “**No MLAs or MLBs**” scenario indicate that in the absence of government assistance payments, price declines of 20-30 percent for wheat, feed grains, and oilseeds would have caused major sector and cross-sector impacts. Compared with the base scenario, output of these crops drops by \$6.5 billion (about 50 percent), many workers leave crop production, and demand for agricultural chemicals and services drops. The price declines lead to a 50-percent reduction in regional wheat output, 40-percent drop in feed crops, and 60-percent drop in oilseeds. Income from wheat, feed grains, and oilseeds falls by 70 percent (or \$4.3 billion).

Livestock producers and food processors are generally the major beneficiaries of a fall in commodity prices. A drop in grain and oilseed prices lowers input costs for these sectors, allowing them to expand

Land Prices Are Higher When Both MLAs and MLBs Are Provided*



MLA = Market loss assistance; MLB = loan deficiency payments and marketing loan gains.

*Scenarios are simulated using a regional economywide model and represent total adjustment over a 3-5-year period from a base scenario.

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production while lowering prices to consumers. According to model results, as crop prices fall, livestock, dairy, and poultry producers in the region increase output by about \$4.3 billion or 14 percent, compared with the base scenario. Food processors increase output by a similar percentage. Employment in these sectors increases by almost 20,000 jobs.

In competitive land markets, falling crop cash receipts drive down cropland values. Without program intervention, the model estimates that cropland prices in the region decrease by 79 percent and farmland prices by 32 percent (cropland in this region is about 41 percent of total farmland) compared with the base scenario. The 32-percent drop is consistent with estimated changes in land asset values nationwide in the absence of program payments (see article on page 22).

Without government intervention, according to model results, the fall in crop prices causes nominal gross regional product (GRP) to drop by 2.5 percent, or \$3.7 billion, in the Northern Great Plains economy. (GRP is a regional measure, comparable to the national measure, gross domestic product.) About 85 percent of this regional contraction is due to low prices,

and the remainder is due to a decline in real economic activity. Offsetting gains in livestock, food processing, and manufacturing diminish the reduction in total real economic activity in the region.

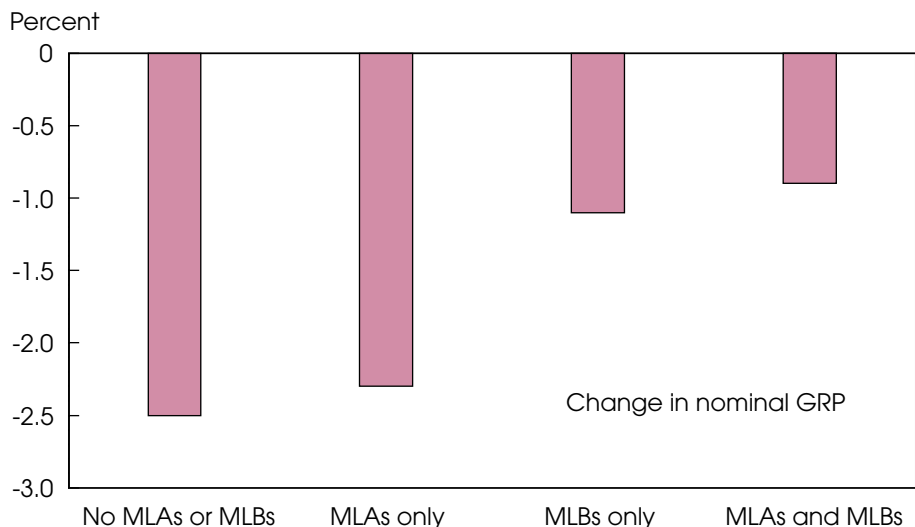
Without the assistance payments, total employment in the Northern Great Plains falls by 40,500 jobs, or 1.1 percent of the labor force. However, this contraction in aggregate employment masks larger shifts in jobs among sectors. Loss of more than 60 percent of total employment in the three major program crop sectors—or 92,000 jobs among farm operators and farm labor—leads to a fall in wage rates that allows other firms to add 54,000 new jobs. Nonfood-related sectors account for 64 percent of these new jobs (mostly in manufacturing), while food-related sectors absorb the other 36 percent.

With Program Payments, Region Adjusts to Lower Prices

Results of the “**Both MLAs and MLBs**” scenario indicate that with these payments, smaller declines occur in wheat production (down 30 percent from the base instead of the 50 percent under the no MLAs or MLBs scenario) and in feed crop production (down 20 percent instead

Policy

Direct Payments Limit Decline in Economic Activity in the Northern Great Plains Region*



MLA = Market loss assistance; MLB = loan deficiency payments and marketing loan gains; GRP = gross regional product.

*Scenarios are simulated using a regional economywide model and represent total adjustment over a 3-5 year period from a base scenario.

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of 40 percent). These drops are partially offset by a 4-percent increase in oilseed production because the MLB subsidy rate and MLA transfers for oilseeds are relatively favorable compared with those for wheat and feed grains. Crop sector income falls by 17 percent from the base scenario, or about a quarter of the potential loss without assistance payments.

Livestock producers and food processors expand production by \$3.2 billion, or 11 percent over the base scenario. Added employment in livestock production and food processing accounts for 46 percent of the net increase of 27,000 jobs in the region, while all nonfood sectors—spread equally across the manufacturing, trade and transport, and service sectors—absorb the rest.

In contrast to the precipitous drop in cropland prices under the no MLAs or MLBs scenario, the two programs together induce a 12-percent increase in cropland prices and almost a 5-percent rise in overall farmland prices. These payments create an implicit wealth effect, ensuring positive increases in land prices for producers in the Northern Great Plains despite the decline in commodity prices.

Clearly, without these payments, the market outcome of declining cropland prices could reduce producer access to credit.

The farm program response substantially mitigates regional economic and employment spillovers from the drop in commodity prices by partially stemming the large outflow of capital and labor from the crop producing sectors. The farm program response reduces the drop in the Northern Great Plains nominal GRP by almost two-thirds to 0.9 percent, or \$1.6 billion. Total employment falls by only 17,000 jobs (or 0.5 percent). Moreover, shifts in jobs from crop production to other food and non-food sectors are much smaller than without program intervention.

MLA and MLB Impacts On Region Differ

MLAs only. MLA and MLB programs differ in their impacts on land prices and GRP. MLA payments alone mitigate the size of the fall in cropland prices by 57 percentage points—i.e., the decline is 22 percent from the base instead of the 79-percent fall in cropland prices under the no MLA or MLB scenario.

While providing relief to landowners, MLAs do not directly influence farmers' decisions or induce adjustments in markets for capital and labor or markets for food and nonfood goods and services. These transfers are spent by operators to reduce farm debt, and by farm households mainly to purchase consumer goods. With MLA payments only, nominal GRP falls by 2.3 percent, slightly less than the 2.5-percent drop that occurs in the no MLA or MLB scenario.

MLBs only. In contrast, the MLB payments alone partially stem the outflow of labor and capital from the crop sectors and reduce the drop in nominal GRP by half to 1.1 percent, or \$1.7 billion. With over 95 percent of this decline represented by the effects of low prices, these payments almost neutralize the real contractionary effects of the price shock on the Northern Great Plains economy. The MLB program allows farmers to minimize lost revenue from some crops by switching to production of oilseeds. Regional cropland prices decrease by 45 percent from the base compared with 79 percent with no intervention, translating to a decrease of aggregate farmland prices of almost 19 percent.

Implications for Regional Policy

MLBs and MLAs represent two types of policies producing different effects on the Northern Great Plains economy. MLBs directly offset producers' costs, reducing market adjustments producers make. With this program in place, the fall in commodity prices becomes less disruptive to the mix of goods and services produced in the Northern Great Plains. Consequently, it is the MLB program itself that is responsible for reducing job losses in crop production by half and almost offsetting the real effect of this price shock on GRP.

As a lump-sum transfer, the MLA payments directly subsidize cropland prices, thereby augmenting crop-sector incomes. However, since MLA-type payments do little to offset reductions in crop production induced by lower prices, crop-sector employment would still fall by the same 60 percent as in the "No MLAs or MLBs" scenario. The larger disruptions in the

other sectors and the regional labor market would still occur.

For the economist, lump-sum transfers such as MLAs are the preferred method of distributing a subsidy because they do not distort farmers' responses to price signals. For the regional policymaker, MLBs are preferred because, by dampening the price signals and slowing the outflow of capital and labor from the crop sectors, they diminish the adjustments that the regional economy must make. Hence the conundrum.

However, an even more fundamental implication exists. Since 1950, farm size has doubled, the number of farms has declined by 60 percent, and technological change has generated a thriving agricultural sector that uses increasingly less labor. Successful U.S. agriculture has been a story of continuous innovation and change in the structure of production, even as real commodity prices follow a downward trend.

The extent to which the current downturn in commodity prices reflects part of the longrun downward trend in real prices indicates there could be a constructive role for marketing loans. If loan rates

were allowed to follow average prices downward, MLB payments could facilitate a smoother structural transition to a new market environment. With an estimated loss of 92,000 crop production jobs in the agriculturally dependent Northern Great Plains without MLBs, even a portion of this job loss is hard to swallow in one gulp. **AO**

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