

A Second Look at Subsidies and Supply

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A previous article in the Iowa Ag Review (Fall 1999, Vol. 5, No. 4) pointed out that because subsidies tend to increase the supply of whatever is subsidized, crop insurance subsidies and emergency disaster assistance will likely increase crop supplies. This supply response will decrease crop prices. That subsidies encourage supply is not controversial; however, some controversy has arisen concerning the estimated magnitude of the resulting price impact.

Some readers thought that the article greatly overestimated the effects on price and wanted a better understanding of the method used to calculate the estimates. The estimates of the price impact of eliminating all crop insurance subsidies and crop disaster assistance programs were based on a number of assumptions, the details of which were not provided because of space limitations.

Actual estimation of the effects on supply from elimination of subsidies would require the elimination of subsidies for a portion of U.S. farming counties and then examination of the changes in production decisions. But clearly, the issue of supply response is not so important that such a drastic experiment is needed.

An alternative method for calculating the effects of subsidy elimination is to compute the price effects under a range of values for the key factors that determine the magnitude of the price change. The two most important factors are the change in supply of corn and soybeans if subsidies were eliminated and the sensitivity of price to the change in supply. Larger supply changes will lead to larger price impacts. If aggregate supply does not change, then elimination of the subsidies will not result in an increase in price. For a given supply change, the price impact is greater when prices are more sensitive to

supply. This sensitivity is measured by the elasticity of demand. The elasticity of demand is the percentage change in quantity demanded of a product due to a 1 percent change in the product's price.

Table 1 shows the change in the market prices for corn and soybeans for a range of values for the demand elasticity and the percentage supply change that would result from elimination of subsidies. The tables show that the largest change in the price of corn or soybeans would occur if supply decreases by 3 percent (approximately 282 million bushels of corn or 88 million bushels of soybeans) and the demand elasticity is -0.2 . In this case, per-bushel market prices would rise \$0.31 for corn and \$0.73 for soybeans. The smallest change in price comes about when the supply change is small and the price is relatively insensitive to the quantity produced.

What are the likely magnitudes of these parameters? There is more information and confidence in estimated demand elasticities than supply changes. Most demand elasticity estimates fall in the range of -0.4 to -0.6 for both crops. Thus, one can say with some confidence that the range of possible price changes from elimination of crop insurance subsidies is between \$0.02 and \$0.16 per bushel for corn, and \$0.04 and \$0.36 per bushel for soybeans. ♦

Table 1. Price impact (cents per bushel) of eliminating risk management subsidies

Corn		Percent Change in Supply					
		-0.5	-1.0	-1.5	-2.0	-2.5	-3.0
Demand Elasticity	-0.2	5	10	15	21	26	31
	-0.4	3	5	8	10	13	16
	-0.6	2	3	5	7	8	10
	-1.0	1	2	3	4	5	6
	-1.5	1	1	2	3	3	4
	-3.0	0	1	1	1	2	2
Soybeans		Percent Change in Supply					
		-0.5	-1.0	-1.5	-2.0	-2.5	-3.0
Demand Elasticity	-0.2	12	24	36	49	61	73
	-0.4	6	12	18	24	30	36
	-0.6	4	8	12	16	20	24
	-1.0	2	5	7	10	12	15
	-1.5	2	3	5	7	8	10
	-3.0	1	2	2	3	4	5