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# What Happens to Exports as Domestic Agricultural Policy Changes?

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Agricultural policies often affect the underlying demand and supply relationships of agricultural commodities and thereby affect their prices. For example, the U.S. biofuels mandate resulted in an expansion of domestic demand for corn and soybeans, and put upward pressure on prices as a consequence. The Conservation Reserve Program, in turn, reduced the supply of products coming from marginal lands, also creating upward pressure on prices.

What happens to foreign demand as a result of these domestic supply and demand changes? The responsiveness of international buyers to changes in U.S. prices is much debated yet poorly understood. Having some idea of importer behavior is necessary, however, for a full accounting of new policies, such as those being debated as part of the new farm bill. Understanding the price responsiveness of international buyers is the topic of this brief.

Some background: U.S. agriculture in general is highly dependent on international markets. In recent years agriculture has been a bright spot in the U.S. economy, with the nation exporting nearly one-half its food grain production. This sector is much more dependent on international markets than the U.S. economy as a whole. As such, the needs of international buyers should be carefully considered during the formation of agricultural policy.

The price sensitivity of international buyers is measured by economists as the price elasticity of export demand, otherwise known as an export demand elasticity. This number is the percent by which U.S. exports change for a 1 percent increase in the price received by U.S. producers. A  $-0.6$  elasticity, for example, indicates that if prices rise by 10 percent, then international purchases fall by 6 percent. If prices fall by 10 percent, by contrast, then international purchases would rise by 6 percent. The export demand elasticity is typically negative, due to the law of demand. If the value is negative but close to zero, the elasticity is characterized as inelastic. If the value is less than negative one, the elasticity is considered elastic.



Different groups of policy researchers have very different understandings of the magnitude of export elasticities, which in turn conditions agricultural policy analysis. The prevailing view within the U.S. Department of Agriculture appears to have gone from inelastic in the 1970s to elastic in the 1980s. During the 1985 farm bill debate, for example, it was assumed that export demand elasticities were less than  $-1$ , that is, elastic. Based on this assumption, support programs for major commodities were altered such that export prices would decline. With their high price sensitivity, importers were expected to increase their purchases by enough to increase U.S. export revenues, despite the lower prices. In more recent years, export demand elasticities have been viewed as relatively inelastic, that is, closer to the perception of the 1970s.

Irrespective of which historical view is correct, elasticities are constantly evolving and always difficult to pin down. One reason is the emergence of new suppliers onto world markets. Historically, the United States has been a major—if not the dominant—global supplier of commodities such as corn, soybeans, and wheat. In recent years, meanwhile, other nations have played a larger role in international markets, including Argentina, Brazil, and the Ukraine. These and other countries are bringing relatively low-cost land into production, adopting increasingly sophisticated production practices, and achieving greater economies of

scale in production and distribution. This brings more supply for international buyers, and moderates the effects of U.S. supply shortages caused by events such as the 2012 midwestern drought.

At the same time, the emergence of new suppliers puts downward pressure on the price that U.S. producers receive for their commodities. In particular, greater choice of suppliers allows international buyers to be more price sensitive than they traditionally have been.

This increase in price sensitivity may be moderated by another development in recent years. International buyers have become more sensitive about the characteristics of products, given their importance for the consistency and quality of end products. Suppliers who can meet these quality demands may have a small amount of monopoly power, meaning that buyers are less price sensitive than before.

These opposing forces underscore the possibility that export demand elasticities have evolved and continually need to be re-estimated. A study carried out with two co-authors shows that during the 2001–2011 period, short-run export demand elasticities for U.S. corn, soybeans, and wheat averaged  $-1.11$ ,  $-0.90$ , and  $-0.45$ , respectively. The first value means that a 1 percent increase in price would reduce foreign demand for corn by 1.11 percent. Over this same time period the long-run export demand elasticity—wherein there is at least a full year for importers and other exporters to adjust—for U.S. corn, soybeans, and wheat averaged  $-1.64$ ,  $-1.45$ , and  $-1.25$ , respectively.

When compared over decades, there have been important changes. Export demand elasticities for corn and wheat were slightly more elastic in the 2001–2011 period than in previous time periods. The export demand elasticity for soybeans, by contrast, was slightly more inelastic during 2001–2011 than it had been in previous years.

The fairly elastic nature of long-run importer response suggests that reduced government support for commodity prices need not imply lower export revenues. If maximization of export revenue is an objective for policymakers, it may be best to let prices fall. ■

## FOR FURTHER READING

Reimer, J., X. Zheng, and M. Gehlhar. 2012. "Export Demand Elasticity Estimation for Major U.S. Crops" *Journal of Agricultural and Applied Economics* 44(4):501-515.



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