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The Economics of World Wheat Markets: Implications for North America

May 29–June 1, 1997

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**It is likely that wheat prices
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Long-Term Supply and Demand Trends: Whither the Real Price of Wheat?

*John M. Antle, Dermot Hayes, Samarendu Mohanty,
Vincent H. Smith, and Pavel Vavra*

Over the past 130 years, the per bushel real price of wheat, in terms of 1995 dollars, has steadily declined at an average annual rate of 0.9 percent, from more than \$22 in 1866 to about \$4 in 1997. Despite massive increases in world population and per capita incomes since the 1950s, the rate of technological innovation in wheat production has been great enough to ensure that the world wheat supply curve has shifted outward sufficiently rapidly to increase the rate at which the real world wheat price has been declining. However, in late 1995 and throughout a good part of 1996, many voices joined together in predicting a new era of higher prices for food and feed grain commodities as world stocks of wheat and corn declined and market prices for those commodities increased substantially. For a brief period, in May 1996, in current dollars, wheat prices were even in excess of \$6/bushel and corn prices in excess of \$4/bushel. Thus the crucial question is whether, over the next five to ten years, the pattern of supply shocks and demand shocks will change the long-term trend in world grain and wheat prices.

In this paper, the price predictions of three well-known short- to medium-term forecast models and one long-term model of world wheat markets are examined. The short- to medium-term models are the FAPRI model, the OECD AGLINK model, and the USDA baseline forecast model. The longer-term model is the IFPRI 2020 model. The predictions of all these models are illustrated in Figure 2, which also includes predictions based on two simple extrapolation models of wheat prices estimated using data on U.S. wheat prices of the periods 1920 to 1995 and 1955 to 1995. The short-term models predict that wheat prices will either decrease modestly or remain moderately stable over the next five to ten years. However, it is worth noting that in these short-term models it is assumed that relatively rapid economic growth will take place in developing countries (upwards of 5 percent per year) and in China, where economic growth is assumed to be between 8 and 9 percent per year over the forecast periods. Moreover, yield growth is forecast to be quite modest.

The IFPRI 2020 forecast model predicts that wheat prices will decline steadily over the next twenty-five years, largely in line with long-term trends. However, the IFPRI forecast is based on a slower economic growth rate for China of 6 percent per year over the forecast period and, possibly, more optimistic assumptions about yield growth.

**Absent dramatic events,...
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Figure 2. Alternative Forecasts of Future World Wheat Prices

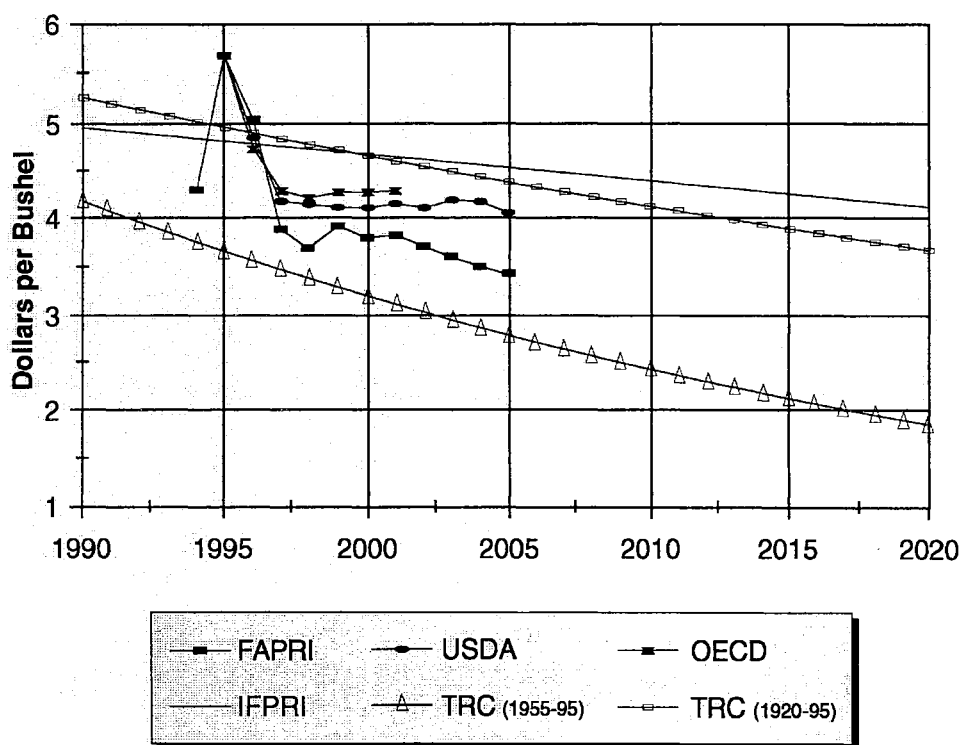


Figure 2 illustrates forecasts of world wheat prices made by a number of institutions. FAPRI: Food and Agriculture Policy Research Institute at the University of Missouri-Columbia and Iowa State University. USDA: U.S. Department of Agriculture. OECD: Organization for Economic Development and Cooperation. IFPRI: International Food Policy Research Institute. TRC: Trade Research Center projections, one using data from 1955-1995, and the other using data from 1920-1995.

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John M. Antle is Professor of Agricultural Economics and Economics and the Director of the Trade Research Center at Montana State University-Bozeman. He received a Ph.D. from the University of Chicago. His research interests include trade and trade policy, food safety, and climate change.

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A small-scale simulation exercise utilizing the FAPRI model was carried out in which "optimistic" or high-price and "pessimistic" or low-price scenarios for wheat prices were considered. In the "optimistic" scenario, relative to baseline assumptions, wheat exports from Australia were assumed to be relatively small and wheat imports by China to be relatively large. In addition, India was assumed to be a small net wheat importer rather than a net wheat exporter. In the "pessimistic" scenario, European Union wheat production and wheat exports were assumed to be larger because of more rapid yield growth. The results of the simulations are interesting in the following context. Reductions in yield growth trends (which drive supply shifts) and/or increases in demand would be needed to reverse the long-run direction of the trend in world wheat markets. The simulations suggest that relatively large shocks are needed to alter world wheat prices, and thus relatively large changes in the relative shifts in supply and demand are likely to be needed to result in increases in real world wheat prices. It is difficult to see why the long-run trends in world wheat demand and supply shifts should be expected to experience substantial changes.

Absent dramatic events, such as those predicted by some climate change models, there is no compelling evidence that an end to agricultural productivity is imminent. Even with climate change, the overall impact on global food production is not expected to be large and, for some crops, could be positive. Nor is it obvious that positive shocks to demand are likely to be exceptionally large. Perhaps, then, a better bet is to accede to the view that the medium- to long-run future of real wheat prices is likely to be much like the past; prices are going to fall, not rise. Of course, exactly how fast they are going to fall is entirely another question.