

Structure of the USDA Livestock and Poultry Baseline Model

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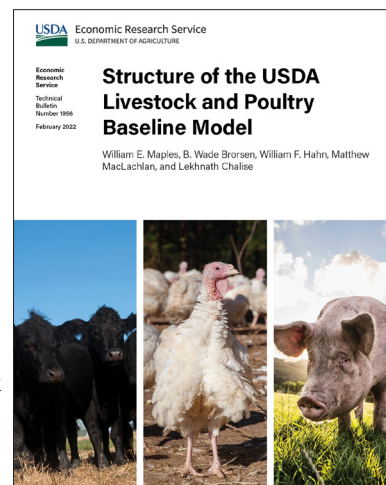
What Is the Issue?

The U.S. Department of Agriculture (USDA) produces annual 10-year projections for the food and agriculture sector that cover major agricultural commodities, agricultural trade, and aggregated indicators of the U.S. farm sector. These projections are published in an annual report, with the most recent being *USDA Agricultural Projections to 2031*. Also, the *Economic Report of the President* includes these projections and has a direct impact on policy decisions. These 10-year projections are called the “baseline.”

The USDA’s Economic Research Service (ERS) maintains a stand-alone livestock baseline model used in the development of the projections, which characterizes the relationships among livestock production and the market conditions for related animal products for cattle/beef, hogs/pork, chicken, and turkey. The livestock baseline model combines data, parameters, and equations from different sources into a single model. This bulletin outlines the equations and estimates of the Domestic Baseline Livestock Model (DBLM), a dynamic, non-linear simultaneous equation model of the U.S. domestic supply, demand, and pricing systems for the beef, pork, broilers, and turkey sectors. These estimates and equations were used to create the 2021 baseline projections and differ from those used in previous baseline projections. Some of the equations in the newest model are similar to those used in the previous model but with different coefficients. Other equations use different structures and data. The goal was to build a model that would project the production, consumption, and prices of the cattle/beef, hog/pork, broiler, and turkey sectors. Most of the variables the model projects are also reported in the livestock and poultry sections of the *World Agricultural Supply and Demand Estimates (WASDE)* report.

What Did the Study Find?

Most of the equation-parameter estimates of the livestock baseline model are consistent with prior studies and economic expectations. The supply-side equations imply that higher prices for an animal or its meat and/or lower costs of production lead to larger supplies of an animal and its products. On the demand side, higher retail prices for a particular meat lead to lower consumer demand for that meat. Also, higher retail prices for a meat are associated with its higher wholesale and livestock prices. The new specifications and estimates were incorporated into the development of the 2021 livestock baseline and will inform future projections.



ERS is a primary source of economic research and analysis from the U.S. Department of Agriculture, providing timely information on economic and policy issues related to agriculture, food, the environment, and rural America.

How Was the Study Conducted?

The researchers reviewed previous literature and consulted with USDA personnel responsible for the livestock baseline and models to develop equations used in this bulletin. Based on these equations, regression models were developed using published Government data. A full list of resources is available in the appendix.