USDA Economic Research Service
U.S. DEPARTMENT OF AGRICULTURE

A report summary from the Economic Research Service August 2022

U.S. Hog Production: Rising Output and Changing Trends in Productivity Growth

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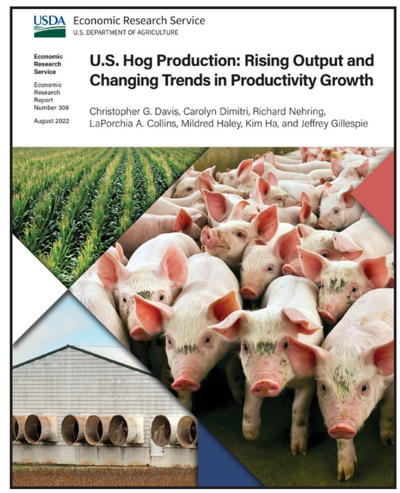

What Is the Issue?

The hog sector began a major transformation in the early 1990s, and since then, it has experienced productivity growth and structural change, increased output, and expanded exports. Although the number of hog farms has declined over time, the typical farm has become larger, and the regional pattern of production has changed. Between 2012 and 2017, the number of hog farms increased after declining for 15 years. During this period, the average size of hog farms grew slightly larger, and the regional distribution of hog production continued to shift. How do these trends relate to the organization of the hog industry, to farmers' production practices and financial outcomes, and to global trade?

What Did the Study Find?

This study examined changes in hog production from 1992 to 2017. The authors find that production contracts have become the dominant business model in hog production, and hog farms have become larger and more specialized.

- In 1992, just 3 percent of operations (5 percent of production) produced hogs under a contractual arrangement. This share increased to just more than half of all operations by 2015 (69 percent of production).
- The scale of operations increased. The average number of hogs sold or removed per farm rose from 945 head in 1992 to 8,721 head in 2015.
- Operations that specialize in fewer phases of production, such as feeder-to-finish operations, became more common.

Technological advancements improved productivity, though changes in production costs were mixed.

- Greater housing capacity for hogs at all phases of production provided infrastructure for the adoption of all-in/all-out management (commingling hogs of similar ages and weights as they move through different growth stages) and phase feeding (changing diets to meet nutritional needs as hogs age). These innovations were adopted to reduce the spread of disease and improve feed efficiency.
- From 1992 to 2015, real feed costs decreased for feeder-to-finish operations, while they declined on farrow-to-finish operations until 2009 but increased in 2015.
- Real production costs (minus pig costs) decreased as labor productivity increased.
- During 1992–2015, the sector continued to replace unpaid labor with paid labor.

Production contract use and farm practices varied by region, for instance:

- In North Carolina, contract production dominated the hog industry, amounting to 91 percent of hogs sold in 2017;
- Production in Iowa and Minnesota (key hog-producing States in the Heartland Region) was split between independent and contract operations, with about 59 percent of hogs sold under contract in 2017; and
- Hog producers in Iowa and Minnesota were more diversified in production than those in North Carolina and had more acres of cropland.

Manure management is critical for a livestock operation. The average hog farm applied manure to 112 acres in 2015, although the application varied. For example, in North Carolina, manure was spread on an average of 55 acres and on an average of 167 acres in Iowa and Minnesota.

The hog industry exported more pork to foreign markets. In 2020, U.S. companies exported 7.3 billion pounds carcass weight equivalent (cwe) of pork to 118 countries for an export value of $7.7 billion, an increase from 420 million pounds of pork valued at $532 million in 1992.

How Was the Study Conducted?

The primary sources were farm-level data from the U.S. Department of Agriculture (USDA), including the 1998, 2004, 2009, and 2015 Agricultural Resource Management Surveys (ARMS), the 1992 Farm Costs and Returns Survey (FCRS) that preceded the ARMS, and the USDA, National Agricultural Statistics Service Census of Agriculture, conducted every 5 years from 1997 to 2017. The ARMS collected data on the financial conditions and production practices of farm businesses and the well-being of farm households. The analysis used the ARMS and FCRS data to describe trends in productivity, costs, contract use, and manure management and the Census data to highlight structural and regional changes in the hog sector over time.