

Determinants and Implications of the Growing Scale of Livestock Farms in Four Fast-Growing Developing Countries

Christopher L. Delgado, Clare A. Narrod, and Marites M. Tiongco
with Geraldo Sant'Ana de Camargo Barros, Maria Angeles Catelo, Achilles Costales, Rajesh Mehta,
Viroj Naranong, Nipon Poapongsakorn, Vijay Paul Sharma, and Sergio de Zen

Livestock is one of the few commodities widely produced by smallholder farmers that is growing rapidly in demand, and it thus holds potential for poverty alleviation. Yet there are signs that small farmers may ultimately be displaced from this source of livelihood by competition from larger-scale farms. Furthermore, the rapid growth in production of pigs and poultry has been associated with significant environmental problems in the zones of most rapid growth. The interactions between overall growth in production, size of farms, and sustainability are crucial to rural poverty alleviation.

This study investigates factors affecting the scaling up of selected livestock products in Brazil, India, the Philippines, and Thailand, with particular attention directed at understanding issues affecting small-scale producers. It aims to assess whether the market share of large farms is growing relative to small farms, and, if so, why. The research is pursued by setting up models and collecting farm-level data to test a number of hypotheses about the relative competitiveness of small-scale and large-scale producers.

Scaling up in livestock production is occurring in all four countries studied. Smallholder output continues to grow at high rates in certain cases, such as dairy in India and swine in the Philippines. Yet the output from large-scale enterprises is growing even more rapidly, taking market share away from smallholders, particularly in Brazil and Thailand, where there are relatively small numbers of small-scale producers left in the broiler business, and the role of smallholders in both dairy and swine is shrinking in relative terms. The question then is whether large-scale livestock production will outcompete smallholder producers everywhere and eventually provoke their exit from the sector.

RESULTS OF THE STUDY

The study looks at factors that differ across farms and that might explain the higher relative competitiveness of specific farms. These factors include the usual determinants of profit

efficiency, such as prices faced by the farm and fixed farm resources not traded in markets, differences in access to assets (such as credit, liquidity, and fixed capital) and information (such as education and experience), externalities (some farmers get away with uncompensated pollution whereas others do not), and policies (some get a better deal from the state than others).

With regard to scale-related differences in farm characteristics, the survey shows that large-scale producers are characterized by large landholdings, high levels of education, more years of experience in livestock production, use of better quality inputs, and access to input and output markets. Large-scale farm households therefore may have a better chance of overcoming high transaction costs in buying inputs and selling outputs than small-scale producers due to lower costs of searching for information. On the other hand, smallholders have a chance to compete with larger-scale producers if they can cost family labor at less than the full opportunity cost of hired labor doing the same tasks on larger farms.

The survey also shows that, across countries and commodities, small-scale farms have higher “expenditures” on environmental mitigation measures, such as lagoons and manure spreading on farm land, per unit of output than large-scale farms (the exceptions are poultry and dairy farms in Thailand). In addition, large farms load more excess nutrients per hectare of land than do small farms. These results suggest that large farms benefit from a higher uncompensated environmental externality per unit of output than small farms, giving them a distorted cost advantage.

The study also reports the econometric evidence on why some farms have higher relative profit efficiency than others. The main findings are as follows:

- Independent smallholders in India and the Philippines typically have higher profits per unit of output than independent large farms, but this is not the case for large and small contract farms. On the other hand, large

independent farms are relatively more profit efficient than small independents almost everywhere, suggesting that over time they will continue to outcompete smallholders and gain further market share (except in India, where most farms are small and dairy dominates).

- In Brazil and Thailand, in particular, where scaling up has already occurred to a large extent in monogastrics, the outlook for independent smallholder producers of these items is not rosy. In the Philippines, there is considerable scope for improving smallholder farming through vertical coordination, especially for swine producers.
- Small farms have a less negative impact on the environment than do large farms. Hence, environmental concerns are compatible with promoting small-scale livestock production. Large farms that are more environmentally responsible are also more competitive within the class of large farms. Efficient large-scale production is thus compatible with good environmental behavior. Over time, enforcement of environmental regulations may become more equitable, with all producers forced to bear the same costs regardless of size, although this change will not by itself reverse the profit efficiency advantage of large farms.
- Beyond the use of (assumed) lower-opportunity-cost family labor, the relative competitiveness of smallholders is largely determined by farm-specific abilities to overcome barriers to access to information and assets, such as credit and market information. Therefore, a possible key to pro-poor livestock development is institutional development that overcomes the disproportionately high transaction costs that smallholders face in securing high-quality inputs and getting market recognition for high-quality outputs.

- Contract farmers have higher profits per unit of output than do independent farmers in some but not all cases, and they tend to be more profit efficient than independent farmers at all scales (except for small swine farms in the Philippines). Therefore, contract farming could help better incorporate smallholders into high-value supply chains that require specialized inputs and sell to markets for specialized outputs.
- Contract farming is shown to be even more useful in improving the competitiveness of large farms than small ones. Therefore, the policy environment for contracting will be especially important to its usefulness as a tool for poverty alleviation.

CONCLUSION

Overall, the study concludes that in many cases smallholders other than the smallest backyard producers will be able to stay in the livestock business for a long time. If the opportunity cost of family labor rises and begins to approach local market wage rates, however, then much of the competitiveness of smallholder operations compared with large farms is vitiated. Furthermore, emerging disease threats and environmental backlash suggest that large and small producers will sink or rise together based on their ability to act collectively to deal with emerging threats. Finding ways to increase synergies between the two groups is very much in the social interest. Finally, if supply chains become longer, wider, and more anonymous, the future for independent livestock farming, whether large or small, will eventually depend on the options for integration with input supply and output marketing operations.

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INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE • 2033 K STREET, NW • WASHINGTON, DC 20006-1002 USA
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