

Thi Thu Huyen Nguyen¹, Nam Ha Duong¹, Van Hung Pham¹, Thi Duong Nga Nguyen¹, Fred Unger², Karl M. Rich³, Lucy Lapar⁴

¹ Vietnam National University of Agriculture, ² International Livestock Research Institute (ILRI), Kenya, ³ Lab 863 s.r.o., Czech Republic, ⁴ International Livestock Research Institute (ILRI), Vietnam

Using a system dynamics framework to assess disease risks of pig value chains in Vietnam

Background

- Over 4 million households produce pigs, representing 57% of the quantity of meat consumed;
- The most critical constraints are animal diseases such as FMD, PRRS, CSF, and food safety issues, such as pork borne diseases;
- How might changes in consumption behavior in response to diseases affect smallholders?

Objectives

- To develop a framework that explores the public health, animal health, and livelihoods impacts of pig diseases and assesses options for appropriate, pro-poor policy response.



Materials and methods

- Data from a sample of 1000 farmers and value chain actors including all actors in the pig value chain;
- A system dynamics (SD) analysis framework is used for investigating ex-ante disease risks, impacts, and policy options (Rich et al. 2011).
- SD model looks at the whole value chain (figure 1), including herd demographics and marketing (figure 2), pig demand at a cut level (figure 3), and feedbacks from producer profits and adoption behavior (figure 4)

Results

- The SD model highlights contrasts in marketing, breeding, and production practices in three systems (farrow-wean, grow-finish, mixed) in two different provinces of Viet Nam (Hung Yen, Nghe An)
- Key intervention points include improved productivity, cost-effective technologies, and efficient marketing channels
- Future simulations to highlight cost-effectiveness of different interventions and system-specific differences.

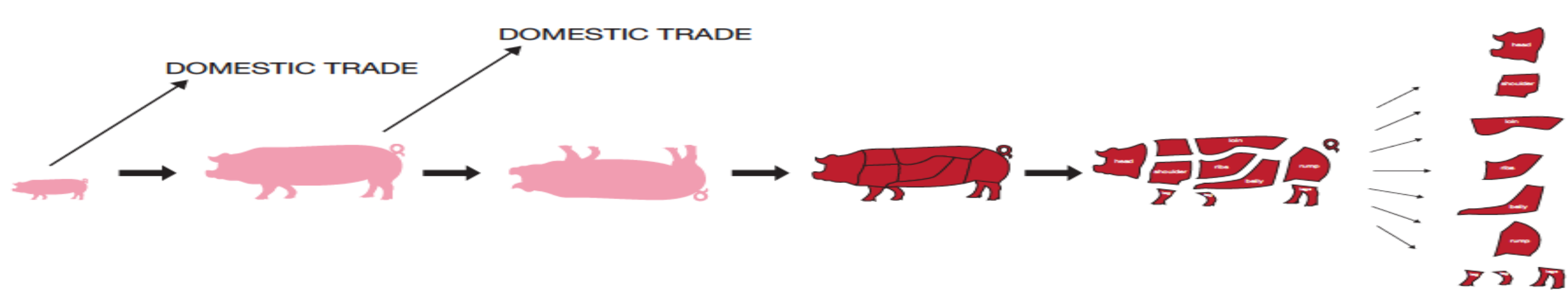


Figure 1: Representation of the pig value chain

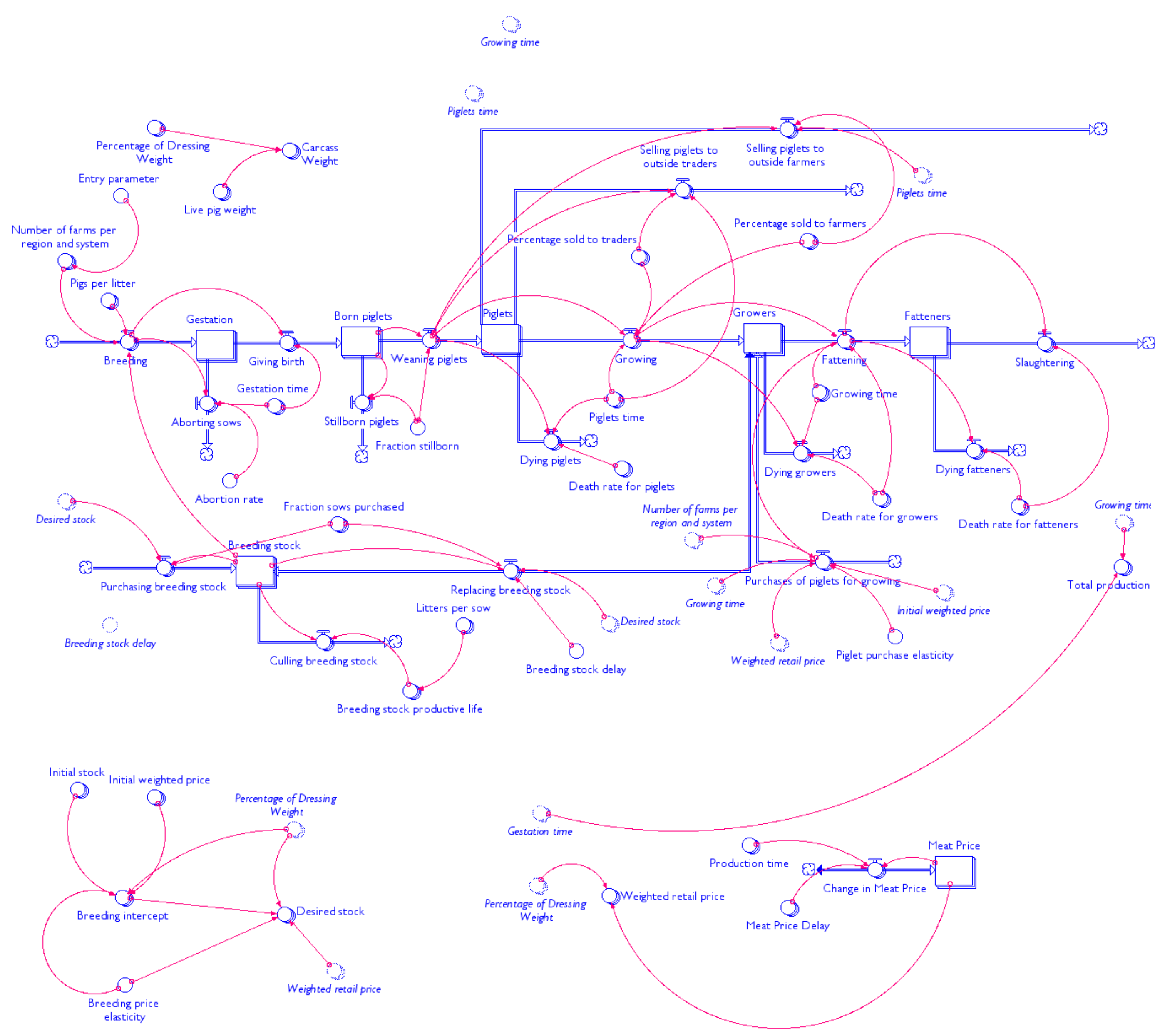


Figure 2: Herd demographics and marketing

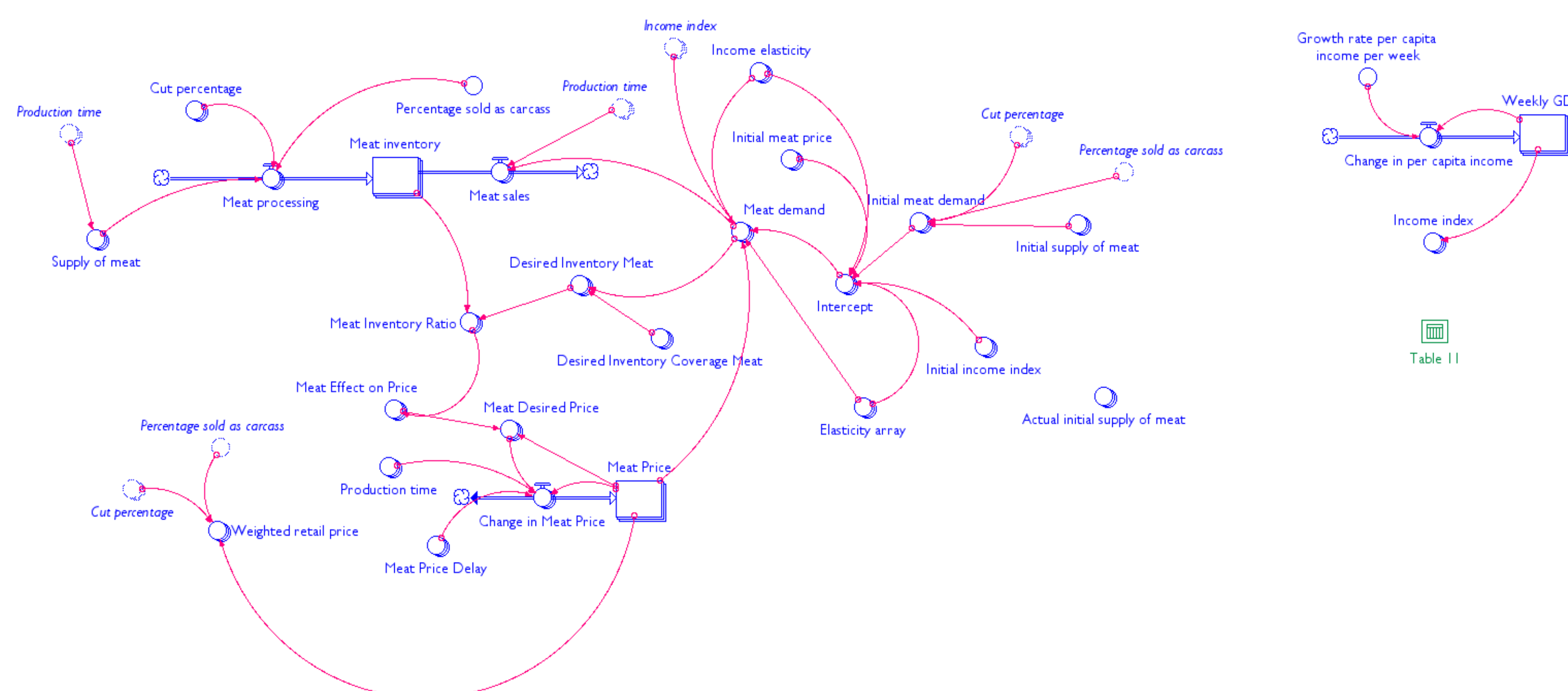


Figure 3: Meat demand and price formation

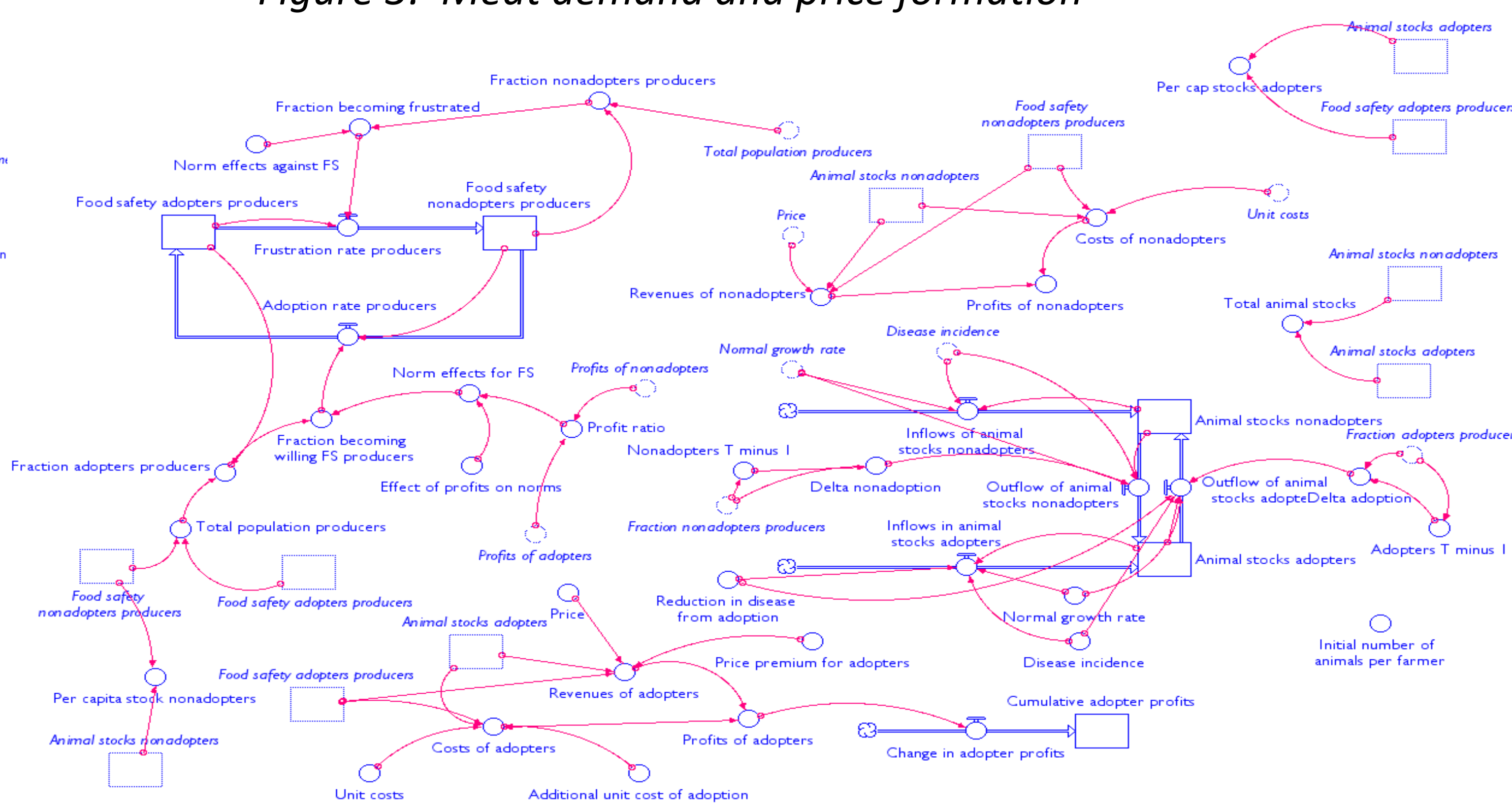


Figure 4: A model of producer adoption

Funding

The authors acknowledge funding provided by the Australian Centre for International Agricultural Research (ACIAR), the CGIAR Research Program on Livestock and Fish and the CGIAR Research Program on Agriculture for Nutrition and Health