



## Thesis Abstract

### **Supply of Hogs and Demand for Pig Meat in North Vietnam and their Implications for Livestock Policy**

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The study aimed to determine the supply response of both backyard and commercial hog farms, the returns to size and private profitability for different scales of swine production, and the demand for pork in different income levels and locations (i. e., rural and urban areas) in North Vietnam.

The restricted profit function in transcendental logarithmic form was used to estimate the revenue and cost share equations for different outputs and inputs in both backyard and commercial farms. The returns to size were computed based on the formula devised by Weaver and through the estimated coefficients from revenue and cost share equations. The gross revenue and costs of production were calculated to evaluate the returns to labor and net profit from pig raising for different scales of swine production.

On the demand side, the linear-approximate almost ideal demand system (LA-AIDS), was employed to estimate pork demand for different income levels and locations in North Vietnam. The three-stage budgeting was used to estimate the demand function for food (stage 1), the demand function for pork (stage 2), and the share equations for different types of pig meat (stage 3).

In the supply response function estimation tests for backyard farms, the results showed that own-price coefficients were, in general, statistically different from zero for all scales of production. Own-price elasticities had signs, which were consistent with the implication of profit maximization. These results provided strong support for the hypothesized responsiveness of output supply and derived demand for inputs to price changes within the production period. The cross-price coefficients were also significantly different from zero for all scales of production. And the cross-price elasticities for major inputs used in production process for all scales have positive signs, which indicated strong substitution between these inputs. For the commercial farms, the study showed that strong complementary relationship existed between the two outputs of piglets and finished pigs. The derived demands for major inputs were highly own-price elastic.

Both backyard and commercial farms exhibited decreasing returns to size, although commercial farms were closer to the phenomenon of constant return to size (where  $RTZS = 0.92$ ). The study also showed that the returns on labor in backyard swine production directly depended on scale of operations. Returns in large-scale farms were about 250 percent and 150 percent higher

than in small-scale and medium-scale farms, respectively. A large variation existed in both scales of production and profit generation among commercial farms. The largest farm generated profits about 12 times greater than that of the smallest farm.

On the demand side, the study showed that there was significant variation in pork consumption among income classes and locations. Low-income and rural households consumed less chicken, beef, and fish. The own-price coefficients of the share equations for different types of pig meat were, in general, statistically different from zero for all income classes and locations. All of the coefficients for per capita pork expenditure variables were also significant for all groups.

The expenditure elasticities varied substantially across types of pig meat and income classes and location. In general, the absolute magnitudes of the expenditure elasticities for all types of pig meat consistently fell with an increase in per capita expenditure (or income) level of the households. Expenditure elasticities were also lower in the urban than in rural households. Higher-priced meat had higher expenditure elasticity for all income groups and locations.

The study showed that, in general, other high-priced meat are substitutes to lean meat in all income classes and locations. On the other hand, some low-priced meat complemented high-priced meat in high income and urban consumers, but is a substitute in other income groups and rural households. An important finding was that none of the pig meat types was considered an inferior commodity, even among high-income groups or urban consumers. Thus, even a very rapid increase in aggregate per capita income in the medium term will not likely depress the demand for pig meat in North Vietnam.