

Farm Household Model  
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Report on Farm Household Model for Quantitative Agriculture Police Analyze

April 2018

Consider the FHM:

$$U(X_C, X_M, X_L) = (X_C)^{\beta_C} (X_M)^{\beta_M} (X_L)^{1-\beta_C-\beta_M}$$

Where  $X_C$  is consumption of the agricultural good and  $X_L$  is leisure. The utility function is maximized subject to:

$$p_C X_C + p_M X_M \leq (1 + \sigma) p_C \gamma L^\alpha A^\psi - w L_H - r A$$

$$L = L_H + L_F,$$

$$\bar{T} = L_F + X_L$$

MCC:

$$Q = X_C + \delta (p_C)^{-\phi}$$

Where:

$$Q = \gamma L^\alpha A^\psi$$

The parameters of the model are  $\beta_C = 0.2$ ,  $\beta_M = 0.4$ ,  $\gamma = 1.75$ ,  $\alpha = 0.4$ ,  $\psi = 0.45$ ,  $\bar{T} = 1$ ,  $\sigma = 0$ ,  $p_M = 1.25$ ,  $w = 1$ ,  $r = 0.5$ ,  $\delta = 2$ ,  $\phi = -0.85$ .

Where  $\sigma$  is a production subsidy.

Consider two scenarios:

*Baseline where  $\sigma = 0$*

*Alternate scenario where  $\sigma = 0.1$*

Results:

Scenario	Domestic consumption	Leisure time	Total Labor	Mfd. Good consumption	Productive area	Price agricultural production
<b>Baseline</b>	<b>0.2741</b>	<b>0.5357</b>	<b>0.9043</b>	<b>0.4285</b>	<b>2.0348</b>	<b>0.9769</b>
Alternate	0.3045	0.548	0.9867	0.4384	2.2202	0.8998
% Change	11%	2%	9%	2%	9%	-8%

As can be observed in the table above, the subsidy of 10% for production has positive effects on all variables except Price of Agricultural Production. Increasing Domestic Consumption, Leisure Time, Total Labor, Productive Area and the consumption of other

manufactured goods. This result is coherent with the economic theory once by subsidizing production the profitability increases, allowing for an increase in production output and income, leading to more consumption and leisure time. In turn, the increase in production output leads to a decrease in prices.