

# Econometric Models of Market Participation

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## The Traditional Econometric Model

$$y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \varepsilon$$

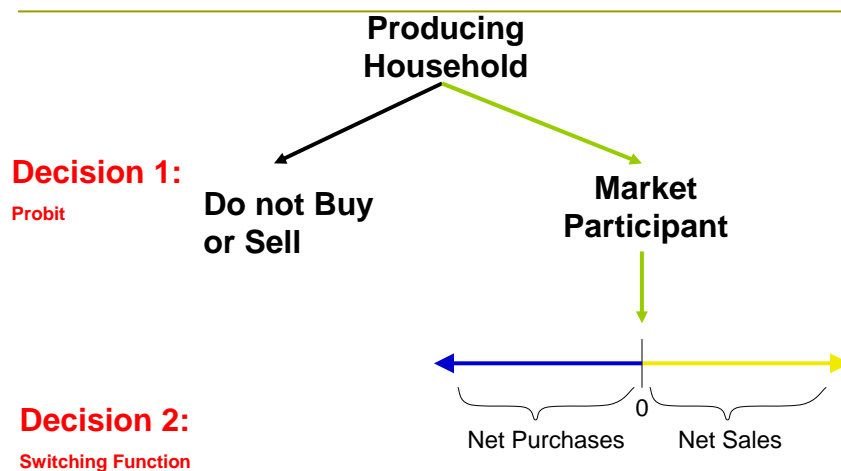
$$\textit{Talktime} = \alpha + \beta_1 \textit{years} + \beta_2 \textit{contacts} + \varepsilon$$

- Generally assumes the "dependant" variable,  $y$ , is continuous.  
(e.g. everyone uses at least *some* talktime.)

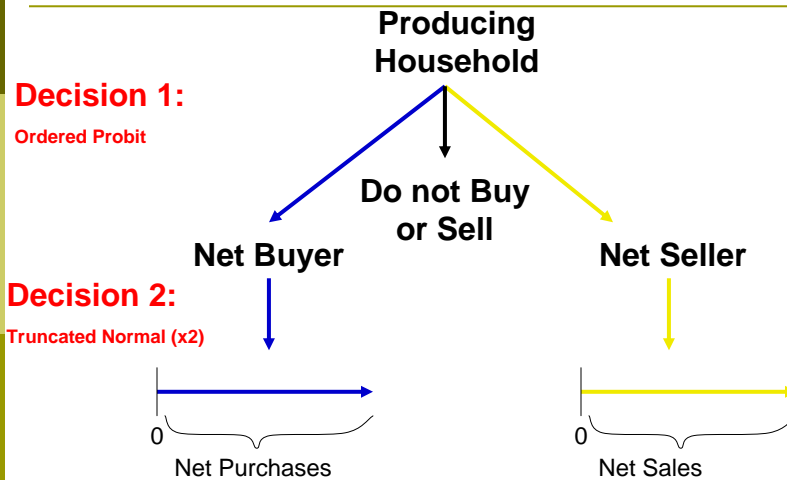
## Market Participation Models

- Market Participation (MP) models
  - “Two-stage” or “double hurdle” models
    - 1) Whether to participate
    - 2) How much to buy or sell
  - Goetz; Key et. al.; Bellemare and Barrett; etc.

## Goetz Two Tiered Market Participation Model



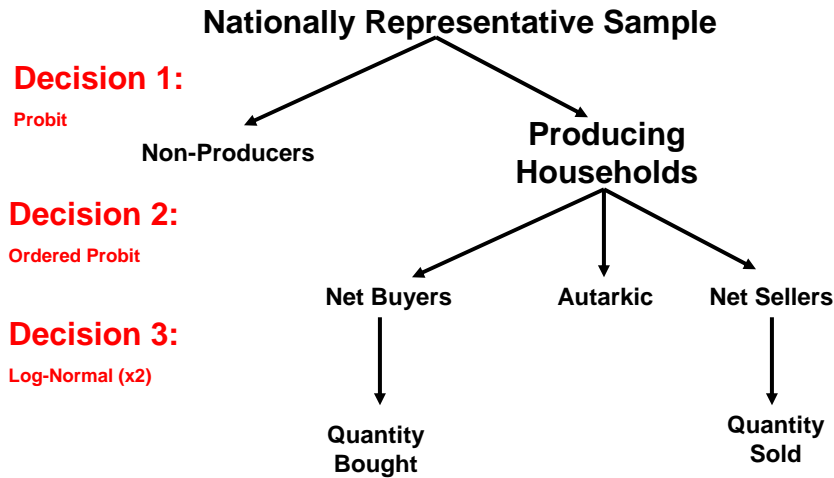
## Bellemare and Barrett (Two Tiered) “Ordered Tobit” Market Participation Model



## Market Participation Models

- Market Participation (MP) models
  - “Two-stage” or “double hurdle” models
  - 1) Participation and 2) How much
  - Goetz; Key et. al.; Bellemare and Barrett; etc.
- Models require all observations be producers, so researchers:
  - Focus on staple crops
  - Focus on sub-population of producers

## Triple Hurdle Model: Market Participation with Production Decision



## Insights from Triple Hurdle Market Participation Model

- Probability of:
  - Not producing
  - Producing, but also being a net buyer.
  - Producing, but not participating in the market
  - Producing and selling
  
- Expected value of market participants net purchases or net sales
  
- Expected value of sales and purchases of any household (per household expected values)

## Kenyan Dairy Example

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- About 85% of E.A. 3.5 million dairy cattle in are in Kenya
  
- Compared to Maize
  - Nearly all households produce maize
  - Less than 1/2 sell maize to generate cash
  - About 2/3 sell Dairy
  - Top 10% of households generate ~80% of maize revenue, versus ~55% of dairy revenue

## Kenyan Dairy Example (2)

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- Since private dairy purchasing enterprises became legal, there are 4 major potential buyers of dairy:
  - Kenya Creamery Company
  - Other co-ops
  - Private processors
  - Informal dairy "hawkers" tolerated, not legal
  
- Despite growth, domestic supply is outpaced by domestic demand and export.
  
- Why?

## What explains Market Participation?

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- Transfer cost determinants
- Endowments
- Access to production inputs
- Market Prices
- Production shocks

## Exercise using model results

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