



Pontificia Universidad  
**JAVERIANA**  
Bogotá

| VIGILADA MINEDUCACIÓN |

# Session 2: Understanding Mainstream Economics of the Household

Maria Floro

American University, Washington DC



GÉNERO Y  
ECONOMÍA  
ESCUELA DE VERANO  
Pontificia Universidad Javeriana

# Class Discussion

Think back to the theory of the consumer in your microeconomics class:

- What are the underlying assumptions?
- How is the 'market agent' described?
- What are the features of the maximizing objective function?
- How is the household depicted in micro theory?

# Quick Review:

## Main Features of Microeconomic Theory

- Maximizing behavior (coordination of individual behavior by implicit or explicit markets )
- Market equilibrium
- Stable, given (exogenous) preferences

# Lecture Outline

- I. Overview of New Household Economics
- II. Becker's Model of the Unitary Household
  - Rational Economic Man (*Homo Economicus*)
  - Utility and Production Functions
  - Specialization and Division of Labor

# I. New Household Economics (NHE)

- Main question: How are decisions made and resources allocated within families?
- Economists' traditional view of the household (before NHE):
  - The household/family is a “black box”
  - All family members have a single set of interests
    - E.g., they maximize a household utility function subject to an aggregate budget constraint

# Motivation for Developing the Field of New Household Economics (NHE)

- Economic phenomenon in late 50s-60s:
  - Rising labor force participation of married women in US and other industrialized countries.
- Some puzzles:
  1. What explains this phenomenon (i.e. significant rise in the labor force participation of married women in the US during the late 1950's and 60's)?
  2. What determines the household division of labor?

# Emergence of NHE in 60's-70's

- The answers given by NHE models are in accordance with the neoclassical economic framework of maximization behavior and equilibrium.
- Main contributors to NHE:
  - Jacob Mincer
  - **Gary Becker\***
  - Reuben Gronau, Finis Welch, etc.
  - Lynn Squire & John Strauss [Agricultural Household Model (AHM)]

# Influence of Becker's Household Model

- “Simple, trackatable model of family behavior”  
...“facilitated the mainstreaming of household division of labor in economic discourse and made it **researchable.**”
- “He puts the family on the economics profession agenda...his vision [of the family] has shaped the tools economists use, the questions they ask and the answers they give.”

(Pollak, 2003)



## II. Becker's Model of the Unitary Household

### DISCUSSION:

1. Briefly describe in your own words, the underlying assumptions of the Becker's theory of the household.
1. Explain his reasoning behind the gender division of labor within the household.

# Key Assumptions of Becker's Model

- Family members are rational, utility-maximizers
- Resources are limited
- Family members optimize
- Preferences are stable and exogenous
- The household is like a small factory

# Becker's Household Model Overview

- Maximizing Utility Function
- Equilibrium Condition
- Household Production Function
  - Constraints: full income and time
- Investment in Human Capital
- Specialization in Households (Division of labor within the family)
  - Comparative Advantage

# Single-Person Households

- This person maximizes utility:

$$U = U(x_1, \dots, x_n), \quad (1.1)$$

- Subject to the budget constraint, where  $p$  is the price of the  $i$ th good  $x$ , and  $I$  is that person's money income:

$$\sum p_i x_i = I.$$

- And the equilibrium condition sets marginal utility  $MU$  of each good proportional to its price, where  $\lambda$  is the marginal utility of income:

$$\frac{\partial U}{\partial x_i} = MU_i = \lambda p_i, \quad i = 1, \dots, n, \quad (1.2)$$

# Multi-Good, Multi-Activity Model

- The utility function is extended to include  $t$  time spent on the  $j$ th activity:

$$U = U(x_1, \dots, x_n, t_{h_1}, \dots, t_{h_r}), \quad (1.4)$$

- A **time-budget constraint** then joins the money-income constraint, where  $t$  is the total time available during some period and  $w$  denotes time spent working for pay:

$$\sum_{j=1}^r t_{h_j} + t_w = t, \quad (1.5)$$

# Multi-Good, Multi-Activity Model (cont'd)

- Equilibrium conditions from maximizing this utility function subject to the full income constraint include:

$$MU_{t_{h_k}}/MU_{t_{h_j}} = 1, \quad \text{and} \quad MU_{t_{h_j}}/MU_{x_i} = w/p_i. \quad (1.8)$$

The MU from all uses of time are equal in equilibrium because they have the same price ( $w$ ), and the MRS between time and each good equals the 'real' wage rate, where the price deflator is the price of that good.

# Household Production Functions

- Rewrite the utility function to include commodities  $Z$ :

$$U = U(Z_1, \dots, Z_m), \quad (1.10)$$

- These commodities are self-produced, taking  $x$  goods and  $t$  time as inputs to produce the  $i$ th commodity, and  $E$  represents household ability, human capital, social and physical climate, and other environmental variables:

$$Z_i = f_i(x_i, t_{h_i}; E_i), \quad i = 1, \dots, m, \quad (1.11)$$

# Household Production Functions (cont'd)

- Commodities have shadow prices equal to the cost of production, where  $\pi$  is the average cost of goods & time spent on each unit of  $Z$ :

$$\pi_i = p_i \frac{x_i}{Z_i} + w \frac{t_{h_i}}{Z_i}, \quad (1.12)$$

- The full-income constraint expressed using these shadow commodity prices becomes:

$$\sum p_i x_i + w \sum t_{h_i} = \sum_{i=1}^m \pi_i Z_i = S. \quad (1.13)$$

- Maximizing the utility function of commodities subject to this constraint equates the ratio of MU of commodity to its shadow price:

$$\frac{\partial U / \partial Z_i}{\partial U / \partial Z_k} = \frac{MU_i}{MU_k} = \frac{\pi_i}{\pi_k}, \quad \text{for all } i \text{ and } k. \quad (1.14)$$



# Investment in Human Capital

- Generalizing the utility function to differentiate consumption at different ages yields the following, where  $Z$  refers to aggregate consumption at age  $j$ :

$$U = U(Z_1, \dots, Z_n), \quad (1.16')$$

- The stock of human capital evolves per below, where  $H$  is the stock at age  $j$ ,  $\delta$  is the depreciation rate, and  $Q$  refers to gross investment at age  $j-1$ :

$$H_j = H_{j-1}(1 - \delta) + Q_{j-1}, \quad (1.17)$$

- This stock is produced according to the following, where  $x$  and  $t$  are goods and time spent on investment:

$$Q_{j-1} = Q(x_{q_{j-1}}, t_{q_{j-1}}; H_{j-1}), \quad (1.18)$$

# Investment in Human Capital (cont'd)

- Wage rates in competitive labor markets are determined by  $a$  earnings-per-hour of a unit of human capital at age  $j$ :

$$w_j = a_j H_j, \quad (1.19)$$

- The total time available at any age can be allocated to the **household**, **market**, or **investment** sector:

$$t_{h_j} + t_{w_j} + t_{q_j} = t, \quad j = 1, \dots, n. \quad (1.20)$$

# Investment in Human Capital (cont'd)

- Marginal cost (MC) of investment at age  $j$  and MR (returns to investment) are equal to the subsequent marginal market and household returns.
- Investment tends to decline with age.
- Because the returns to human capital increases with the rate of utilization, it pays to invest in one type of human capital only and uses it full time than to invest in both types and uses each part-time.
- This consideration causes agents (i.e. household members) to specialize in different activities based on their comparative advantage.

# Investment in Human Capital: Implications

If husband ( $i=1$ ) works 1 more hour in household production while wife ( $i=2$ ) works  $[MP_1/MP_2]$  fewer hours, the total effective time devoted to household production remains unchanged. But the change in total wage income is

$$= w_1 + w_2 (MP_1/MP_2)$$

which is positive if  $MP_1/w_1 > MP_2/w_2$ .

*Thus, the household will be better off if the husband specializes in household production while the wife specializes in market work.*

# Overall Model Implications

1. Money income is determined by allocation of time; earnings is determined by time allocated to work.
2. Negatively sloping demand curve (for goods and activities).
3. Rise in P reduced D of that good and increases demand for other goods
4. **Substitution effect:** reduces time spent at work and increase the time spent on nonmarket activities since a rise in the price of a good reduces the real wage rate.
5. **Rise in a real wage rate:** reduces time spent on child care increases the demand for nursery schools, and consumer durables (time-saving).

# Multi-Person HHs: Division of Labor

- Generally speaking, what determines the division of labor in the household?
  - Biological differences
  - Experience
  - Investment in human capital
- What of marriage?
  - Consider it as a two-person firm with an entrepreneur and employer with long-term commitment...
  - Women hire men as breadwinners, men hire women as nurses/maids.

# Household Production Function

- Features:
  - Commodities include: children, prestige, self-esteem, health, altruism, envy, and pleasures of the senses
  - Shadow prices are equal to the costs of production
  - Implies a special relation between goods and time used to produce the same commodity
- Examples:
  - Meat, stove, and household member's labor time are inputs into the production of health.
  - Parental time and nursery schools are substitutes in the production of children.

# Household “Full Income”

- Household resources are measured by what is called *full income*
- **Full income** = the sum of money and that which is foregone or “lost” by use of time and goods to obtain utility
- Therefore:
  - When one spouse stays out of the job market to raise children or manage the household, the ***opportunity cost of time*** is what is given up, and presumably the use of this time in the household is more valuable than whatever would be gained (financially or otherwise) if that spouse had remained in the labor force.



# Household Division of Labor

- Division of labor:
  - Based on the theory of **comparative advantage**
  - Determined by **marginal productivities** (economic maximizing principles)
- Specialization in households:
  - Theorem 2.1 – complete specialization
  - Theorem 2.2 – specialization determines type of capital invested
  - Theorem 4 – with constraint or increasing returns to scale, complete specialization

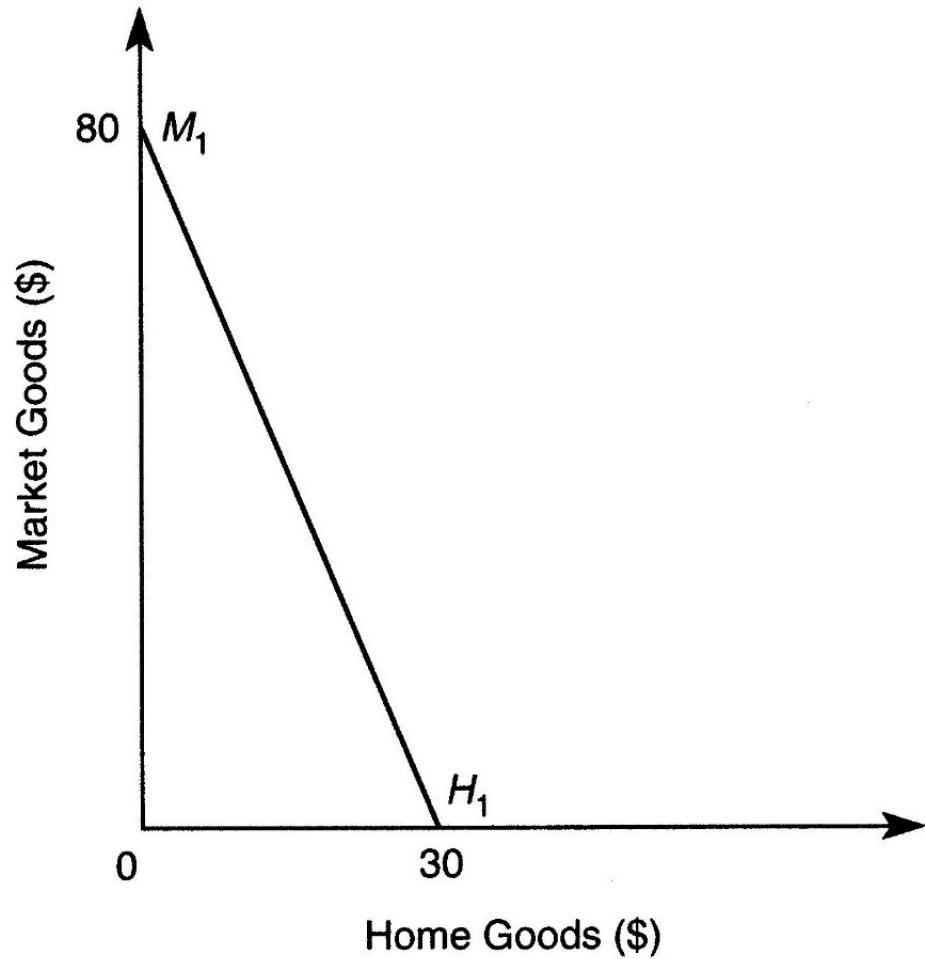
## Sex-Specific Specialization (cont'd)

- “Households with only men or only women are less efficient because they are unable to profit from the sexual difference in comparative advantage.”
- “Specialized investments and time allocation together with biological differences in comparative advantage imply that married men specialize in the market sector and married women in the household sector.”

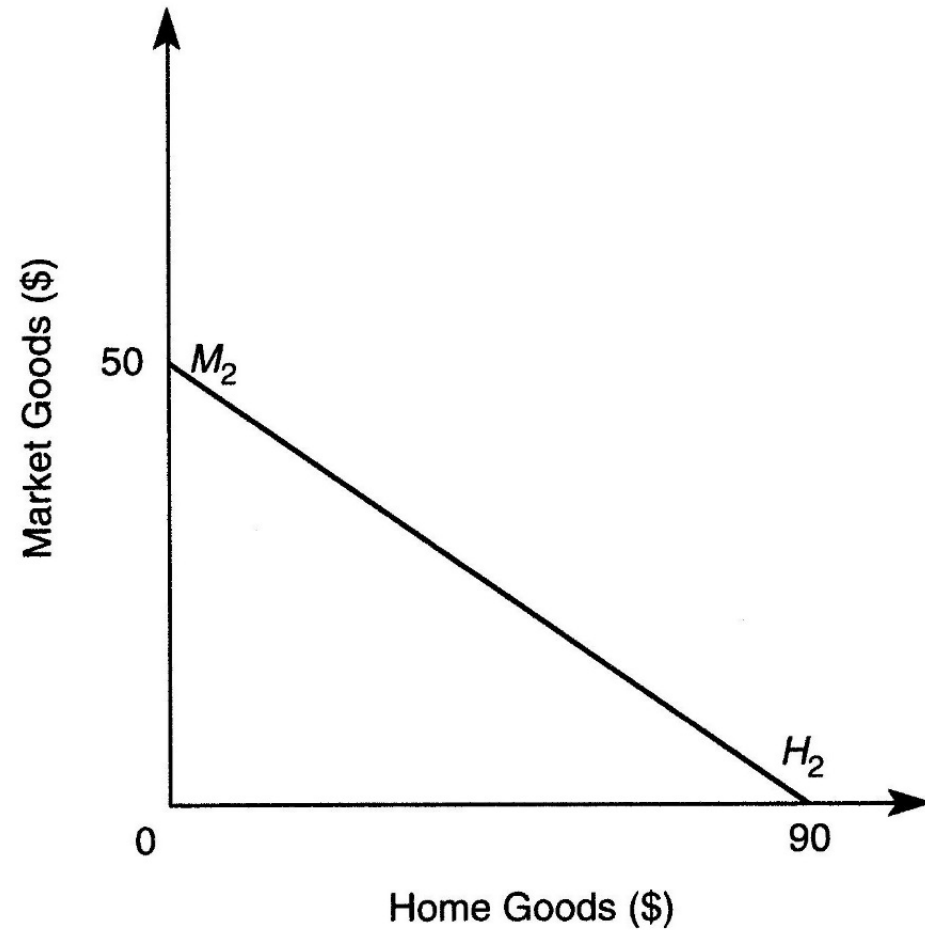
# Specialization and Exchange

- This theory states that family members should specialize in what they do relatively best, similar to “gains from trade” view of comparative advantage.
- Ex: Women have a comparative advantage in domestic activities; men have comparative advantage in market activities. Both gain from specialization and exchange.

# Production Possibility Frontiers



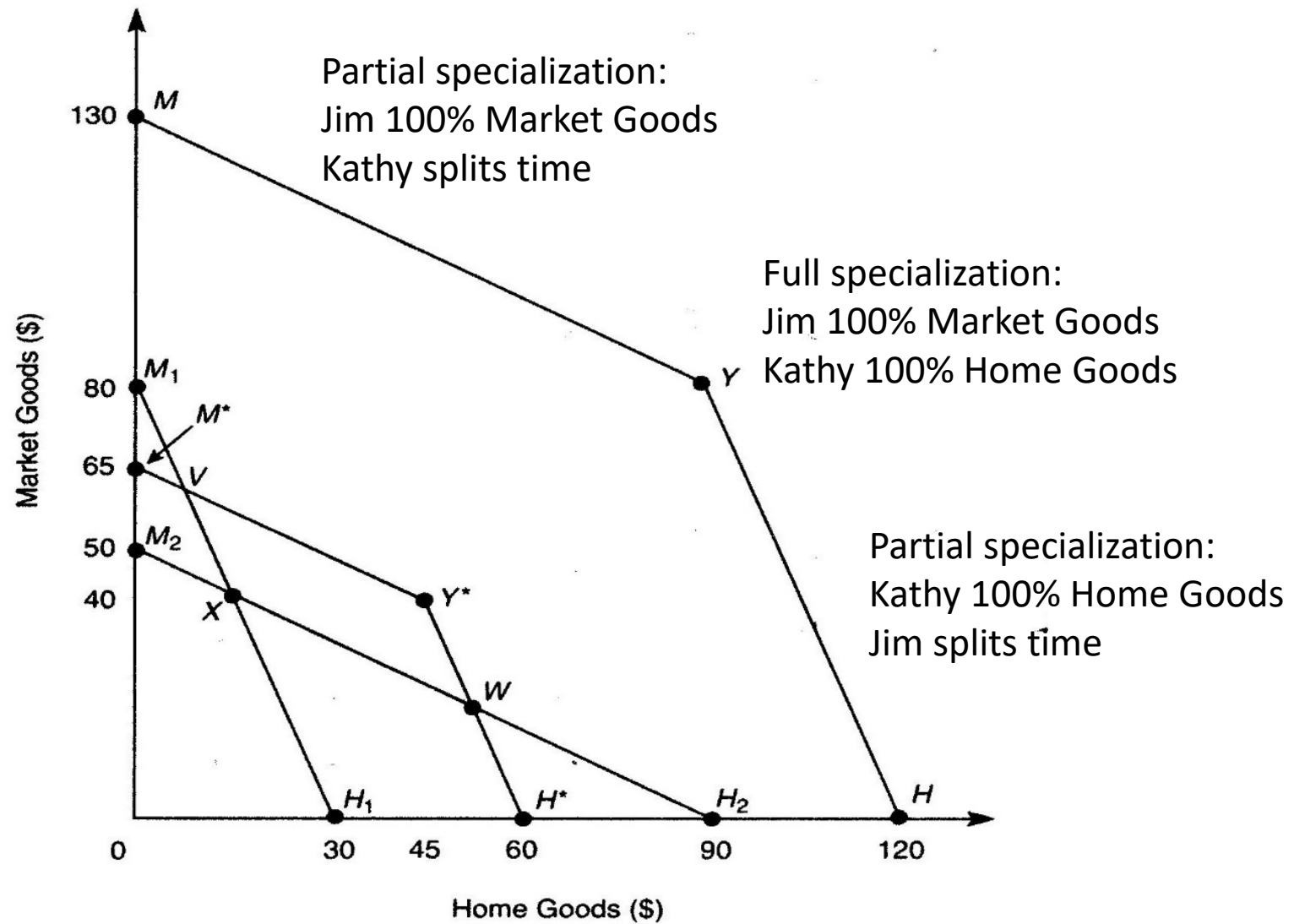
(a) JIM



(b) KATHY

# What Happens in this Household?

- We can draw the PPF for this two-person household by combining the two individual PPFs:
  - The **X-intercept** will be the quantity of home goods produced if both only work in **household production** ( $30 + 90 = 120$ )
  - The **Y-intercept** will be the quantity of market goods produced if both only work in **market production** ( $50 + 80 = 130$ )
- Let's assume that, as a household, they prefer to have some combination of household and market goods
  - Based on **comparative advantage**, who should be assigned to household production? (Kathy)
  - So, let's have Kathy **specialize** in producing home goods (yielding 90) while Jim **specializes** in producing market goods (yielding 80)



(c) JIM AND KATHY COMBINED

# Gains from Specialization in the Household

- **Becker (1991), Theorem 2.1:**

“If members of a household have different comparative advantages, it is most “efficient” if everyone with a greater comparative advantage in the market specializes in the market and everyone with comparative advantage in the household specializes in household production.”

- **Becker (1991), Theorem 2.2:**

“If members of a household have different comparative advantages, it is most efficient if members specializing in the market sector would invest only in market capital and members specializing in the household sector would invest only in household capital.”