Lecture 11—Inside the household: How are decisions taken within the household?

Prof. Esther Duflo

March 16, 2004

Until now, we have always assumed that the household was maximizing utility like an individual. This is called the *unitary* model of the household. But the household is not one individual, it is a collection of individuals living together. Why would the decisions of these groups be taken exactly like those of an individual?

Two cases:

1. “Dictatorial” household: Decisions are taken by one member who maximizes according to his own utility function.

   Ex: Child labor model – one child, one adult, who decides? NB: Does the parent ignore the consumption and the leisure of the child in the child labor model?

   The preference of the dictator can be *altruistic*.

   Definition of altruistic:

2. Household with “unanimity” in preferences. All the household members have exactly the same preferences, so they maximize the same function.

In reality, both assumptions are likely to be violated. A few reasons:
We are left with two questions to answer:

1. Is the unitary model of the household right? How can we reject it or accept it in the data?
2. Is there a better model to describe the household? Can we accept or reject this model?

Today we will focus on the first question, and in the next lecture we will focus on the second question.

1 A framework to test the unitary model of the household

Imagine a household of two persons: Ahmad and Bijou. Each household member eats a consumption bundle with several goods [this is a vector (bread, butter, liquor, women’s clothing, etc.)]. Note: $q^A$ the vector of consumption of Ahmad, $q^B$ the consumption of Bijou.

The preference of Ahmad can be represented by a utility function $u^A(q^A, q^B)$. Why does $q^B$ enter in Ahmad’s utility function?

The preference of Bijou can be represented by a utility function $u^B(q^A, q^B)$.

How can we represent the preferences of this couple without imposing that the household is unitary?

We will assume that the couple maximizes a weighted sum of each member’s utility. This imposes a strong assumption on the way the household operates. The household members try to maximize a pie which involves both members’ preferences.

When you meet a stranger and have to allocate a pie, you typically do not maximize such a function: each of you tries to extract the maximum for himself. In the next lecture, we will think about what it means to represent household’s preference in this way, and whether it is reasonable.

$$\text{Max} \mu^A u^A(q^A, q^B) + \mu^B u^B(q^A, q^B)$$

such that $p(q^A + q^B) = y^A + y^B + y$,

where $\mu^A$ is the weight given to Ahmad, $\mu^B$ is the weight given to Bijou, $y^A$ is the income of Ahmad, and $y^A$ is the income of Bijou.

When does this function boil down to the unitary representation of the household?
• The dictatorial case:
  – Representation of the maximization problem:

• The unanimity case:
  – Representation of the maximization problem:

In both cases, the weights drop from the maximization problem and we are back to a standard problem.

When maximizing this problem, you obtain the demand of the household for all the goods in the consumption bundles. In the general case they will depend on:
  –
  –

In the unitary case, they will depend only on:
  –
  –

So, a test of the unitary model against this more general model is to regress consumption of various goods (bread, liquor, women’s clothing, etc.) on prices, total household income, and the weight given to each household member in the household utility function.

The problem: weights are not observed. We need to find a proxy for weights. A proxy is a variable which replaces the variable we are directly interested in but cannot measure.

2 Implementing the test

2.1 What can proxy for the weight?

Weight: bargaining power of each household member.

What can influence bargaining power (remember previous classes)?
  –
  –
  –
  –
2.2 Testing unitary model using data on individual income: Brazil

A specific example: income of each household member. Assume that the weights are a function of \( y^A \) and \( y^B \).

Think of running a regression of the consumption of each good on income of the man and income held by the woman.

- What are the predictions of the unitary model on the coefficients of these two variables?
- How can the unitary model be rejected?

There is an immediate difficulty with this test if we use labor income: Leisure can be thought of as a good consumed by the household member, who chooses jointly his consumption of leisure and his income. So instead of labor income, we need to use non-labor income.

Duncan Thomas uses data from Brazil to test run this regression and test the model:

For a data set of households indexed by \( i \), and a series of goods \( q_j \), he runs the regression:

\[
q_{ij} = \alpha_jy^A_i + \alpha_jy^B_i + X_i\beta_j + \epsilon_{ij}
\]

See the results in the handout. How do we interpret them?

2.3 Why is this test not perfect?

Why does the woman have unearned income to start with?

- Can it tell us something about her background?
- Can it tell us something about the type of community she lives in?
- Can it tell us something about her husband (recall the dowry model)?

2.4 Testing the model using a pension in South Africa

Duflo (2003) studies the impact of a pension program in South Africa on child nutrition, measured by weight for height (a measure of nutrition flow) and height for age (a measure of nutrition stock).

At the end of Apartheid: A pension program until then essentially reserved to Whites was extended to Blacks without a change in benefits. Individuals are eligible on the basis of their
age (60 for women, 65 for men), and a means test, which rules out almost every White and few Blacks who have a private pension. Expansion started in 1991, was finished in early 1992. A small program for Whites turned out to be a major program for Blacks. Late 1993, 85% of Blacks eligible on the basis of their age were receiving the pension. The pension was 300 Rands per months (3 dollars per day), which was twice the income per capita in rural areas. A good opportunity to test the unitary model: If the household was unitary, it would not matter whether the pension is received by a male or by a female.

Test: Effect on child nutrition. 17% of kids age 0-5 live with a pension recipient. Does the pension have an effect? Is the effect different for boys and for girls? Is it different depending on who receives the pension?

2.4.1 Weight for Height

Extended families and nuclear families are different: Do you think that children living with their grandparents are richer or poorer?

First strategy: Compare the weight for height of children who live with a pension recipient to that of family that lives with someone who is just a bit too young to be a pension recipient: Why is that likely to work?

Results: see handout. What are the main conclusions:
- on the effect of pension for boys?
- on the effect of pension for girls?
- on the effect of pension received by male?
- on the effect of pension received by female?
- on the effect of pension received by mother’s mother?
- on the effect of pension received by mother’s father?

Do you have a story for this chain?

What could the problems with this empirical approach be (simply comparing families with women aged 55-59 to those with women above 60, for example)?
2.4.2 Height for age

To address these, second strategy: Height for age. Height for age is in large part determined by early childhood nutrition, so that if a child has not been correctly fed in the early years, he may remain smaller even after he starts being well fed.

- what do you expect to see for children born before the pension was put in place if families with old people tend to be poorer? Would that vary depending on whether the old person is a male or a female?
-what do you expect to see for children born after the pension was put in place if the pension is partly used to feed children better? Would that vary depending on whether the old person is a male or a female?

See handout: graph of height for age according to age, for different types of families. Do we see what we expect?

Difference in difference: OLD child/ YOUNG child–with pension recipient/no pension recipient.

Regression framework:

\[ \text{HEIGHT} = a + b \text{YOUNG} + c \text{PENSION} + d \text{YOUNG*PENSION} + e \]

Where would you see a, b, c, and d in a DD table?

Results: see handout.

-how to read these results
-are they similar to what we had found using weight for height?
-what do we conclude?

3 Conclusion: Why do we care?

- Role of economic growth in improving human capital
- Design of public policy
  - Women’s empowerment can be good for equity and efficiency
  - Design of cash transfer programs
  - Income transfer programs vs. employment creation
  - Land reform vs. cash transfer programs
– Unintended consequences of other programs: example of community forestry in India