14.74 Foundations of Development Policy
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Lecture 13: Inside the household: How are decisions made within the household?

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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 made exactly like those of an individual?

Two cases:

1. "Dictatorial" household: Decisions are made 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:

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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 try to answer both questions.

1 Representing preferences

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 $u^B(q^A, q^B)$.

Ahmad gets income y_A and Bijou gets income y_B.

Ahmad and Bijou must make decisions about what goods to buy for the household (and who will get to eat what).

We are trying to understand how they will arrive at this decision:

We can consider several cases:
1)How can we represent the preferences if Bijou is a all-dominating mother?

2) How can we represent the preferences if Ahmad and Bijou have exactly the same preferences?

Does either of these models require any different analysis than the traditional model where each individual is making individual decisions? Those two models are called models of a *unitary* household.

3) How can we represent the preferences if Ahmad and Bijou are trying to maximize the joint welfare of both members?

4) How can we represent the preferences if Ahmad and Bijou are each maximizing their own utility?

2 Which model is plausible?

Is model 1 very plausible?

Is model 2 very plausible?

Would model 3 be plausible if Ahmad and Bijou just met for the first time?

Why is model 3 plausible in the case of a family?

3 Testing household model

3.1 Is the household unitary?

Imagine the household is unitary. Without loss of generality, the household is then maximizing Bijou's preferences,

under the resources constraint:

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

$$\text{such that} \;\; p(q^A + q^B) = y^A + y^B,$$

What do demand functions (q^A, q^B) depend on?

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- What do they *not* depend on?

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Now imagine that the household is *not* unitary, but we are in case 3:

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

$$\text{such that} \;\; p(q^A + q^B) = y^A + y^B + y,$$

What do demand functions (q^A, q^B) depend on now?

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We don't observe the weight directly, but what are possible determinants of it, and what are good proxies we could observe?

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- So what would happen if model 1 or 2 were not true, but 3 were true? What test(s) can you think of to reject the unitary model?

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Now imagine that the household is made of two household members who each maximize their own utility functions.

What do demand functions (q^A, q^B) depend on now?

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Do the tests you propose above allow you to discriminate between model 3 and model 4?

So with this type of test, we can *reject* unitary model, but not discriminate between a welfare maximizing household and an atomistic (inefficient) household.

• Implementing the test

-We need a variation in the weights that is not directly related to variation in preferences. What would be a problem if we used labor income?

-Ideally we want an unexpected, permanent variation in the weight. This could be given by an unexpected, permanent increase in women's bargaining power.

-An example: Pensions in South Africa.

Pensions were introduced for Black South Africans in 1993, and represent a substantial transfer of income for

men older than 65 and women older than 60. Many children live with their grandparents (a grandmother, a grandfather, or both).

The grandparents suddenly receive this income that they would not have expected for most of their lives but is now permanent: do they share it with their grandchildren, and do grandmothers share it more than grandfathers? In particular, are the grandchildren now better nourished (bigger weight, taller).

In a unitary household, what would we expect?

-Results: weight-for-height.

Weight for height is a fast reacting measure of health: we can use the same strategy as in the paper on child labor (compare people who are just eligible to those who are not yet eligible).

What do we find?

-Result: height-for-age

Height for age can to some extent replace a "pre" period.

Why? Because height for age is a stock measure: if you have not been fed very well in early childhood, you have not fully recovered by age 5.

All the kids were measured in the same year. What difference do you expect to see between children with an eligible grandmother (grandfather)–for older children? for younger children?

How should we set up the difference in difference estimator?

See the result in the table. Conclusion?

3.2 Is the household Pareto-efficient? A simple test

Now that we know that the household is not unitary, can we discriminate between 3 and 4? With simply this model, it is difficult without knowing the exact shape of the preferences.

To test for efficiency, let's enrich the model and introduce explicitly the notion that the household needs to maximize the "size of of the pie".

Agricultural households do two things: home production and consumption. Intuitively, a Pareto-efficient household would first maximize the size of its total income, and *then* share this income according to the set of weights that are specific to the household. This test of Pareto efficiency is based upon this idea, it is implemented in the paper by Chris Udry "Gender, Agricultural Production and the Theory of the Household," which you should read.

Setting: Burkina-Faso. Very poor, semi-arid area. There is on average 1.8 wives for each head of the household. Important characteristic: Women and men each control their own plots.

Model: Keep thinking about Ahmad and Bijou. Ahmad controls plot A, and Bijou controls plot B.

Plot A has characteristics X^A: size, fertility, distance from the house, etc....

Plot B has characteristics X^B.

Production function: $h^A = f(I^A; X^A)$, where I^A are the inputs that are applied to plot A (labor of A, labor of B, labor of the children, fertilizer, etc...).

To simplify, we are going to assume that the only inputs are the labor of A and B. So

$$h^A = f(L_A^A, L_B^A; X^A),$$

where L_i^j is the labor that household member i applies on plot j.

Likewise, $h^B = f(L_A^B, L_B^B; X^B)$.

Imagine a Pareto-efficient household (with the same utility function as in the previous lecture).

They maximize:

under the following constraints:

$$h^A = f(L_A^A, L_B^A; X^A) \quad (1)$$
$$h^B = f(L_A^B, L_B^B; X^B) \quad (2)$$
$$L_A^A + L_A^B = L_A \quad (3)$$
$$p(q^A + q^b) = p(h^A + h^B) \quad (4)$$

• Note that the problem is the same as in the previous lecture, except now individual incomes are determined by the production decisions of the household.

• Note that, once the weights are fixed, how the production is achieved is irrelevant for the household's total welfare: what matters is total production.

The household can solve this problem *sequentially*:

- First maximize production

- Second choose the individual consumption levels

Therefore, the household should apply labor on each plot until the marginal product of labor is equalized across plots.

What does this imply for h^A and h^B:
-If they have the same X^A and X^B they should be ....
-Once we control for X they should be ....

Therefore, the yield (production divided by size) of each plot should be independent of the gender of the owner of the plot.

Test: for a given year, household and crop, is the yield a function of the gender of the person who owns the plot?

Regression:

$$Q_{htci} = X_{htci}\beta + \gamma G_{htci} + \lambda_{htc} + \epsilon_{htci}$$

where:
-h:
-t:
-c:
-i:
Q_{htci}:
X_{htci}:
λ_{htc}:

Test: is γ equal to zero?

Results in the tables. The summary is that the household could achieve an increase of 5.8% of the production just by reallocating inputs across plots.

The household appears not to be efficient.