

MIDTERM EXAM; FIRST HALF OF FALL 2010

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The following exam covers selected material from the first half of ARE 251/Econ 270A. You should answer each question concisely, returning no more than five pages (written on one side) in total. Further, any single page with more than 3000 characters or symbols on it may be discarded.

Consider a village of n people, each belonging to one of $m < n$ households; the number of people in the i th household is given by n_i . You have data on basic demographic characteristics of all of these n people, and a panel of data collected over $T > 1$ years on income (y_{it}) and expenditures (c_{it}) collected at the level of the m households.

Unless stated otherwise, assume that the people who live in the village are all risk-averse, with time-separable preferences, and a CES momentary utility function with coefficient of risk aversion equal to two.

- (1) Explain in detail how you would go about using these data to describe the extent of inequality in food consumption across households within the village, using an Atkinson measure of inequality.
- (2) Suppose that in addition to household level expenditures you're able to use recall data to estimate the food consumption of each individual within the household, and so construct a measure of inequality in food consumption across individuals within the village. How will this individual-level measure of inequality differ from the household-level measure of inequality in terms of magnitude? How would you interpret this difference?
- (3) Suppose that you find that Atkinson-inequality with a coefficient of inequality aversion of two has increased over between the first and last rounds of data, while inequality aversion equal to one inequality seems to have decreased.
 - a) Without any further information, what can you say about how the Lorenz curve must have changed between the first and last periods?
 - b) What can you conclude about risk-sharing within the village from the fact that inequality (with inequality aversion of two) has increased over time?
- (4) Suppose (completely unrealistically) that your expenditure data was collected with no measurement error. If there was full risk sharing in the village and you conducted a simple analysis of variance, then how much of the variance observed in the growth of consumption expenditures would be explained by the passage of time in your panel? How much strictly due to variation in the cross-section?
- (5) Let the village population be ordered so that household i has an expected income smaller than household $i + 1$ for all $i = 1, \dots, n - 1$. With probability $\psi > 0$ a government program is introduced at time t that will give "the poorest of the poor" (that is, household 1) an additional unit of the consumption good in every period from t on. If in fact the program happens, then how do you expect the announcement of this program to affect the allocation of consumption between household 1 and other households in the village at time t ? At $t + 1$? At $t - 1$? (Hint: how does the possible introduction of the government program affect the commodity space?)