

# Homework 3 - Development Economics

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## Question 1

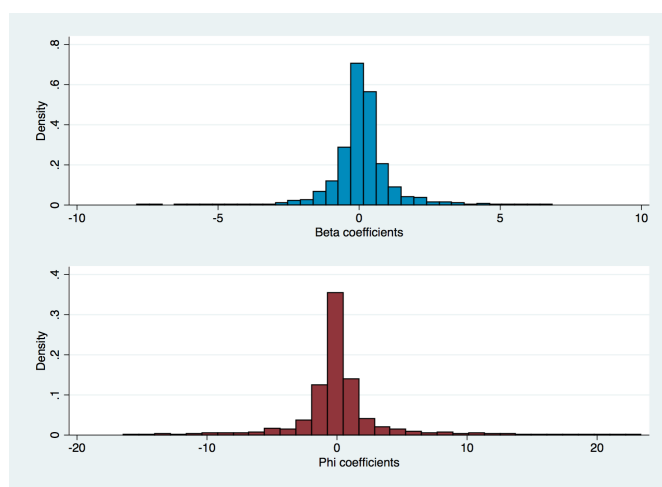
### Full Sample

First of all, I analyze the beta for the regressions at the household level for the full sample. Note that the results of the beta and phi coefficients have been trimmed at the 1% level. As it is possible to see below, the mean value for the beta is 0.117, and the median is 0.0842. We can say that the values are near to zero, and so (almost) total consumption insurance is achieved.

For what concern phi, a value of phi near to 1 would mean that near full insurance is almost achieved; but we can see from the table that the mean of phi is 0.169, and the median is even negative (even if very little, that is -0.00310). This results is actually quite odd (since theoretically, to be compatible with the values of beta, it should be around 1). It could be that this strange result derive from problems in the calculation of the aggregate consumption (i.e., if insurance is achieved at the village level, but the village aggregate consumption is not correlated with the regional consumption, used for the estimation).

	Mean	Median
Beta	0.117	0.0842
Phi	0.169	-0.00310

Figure 1: "Histograms for Beta and Phi, Total Sample"



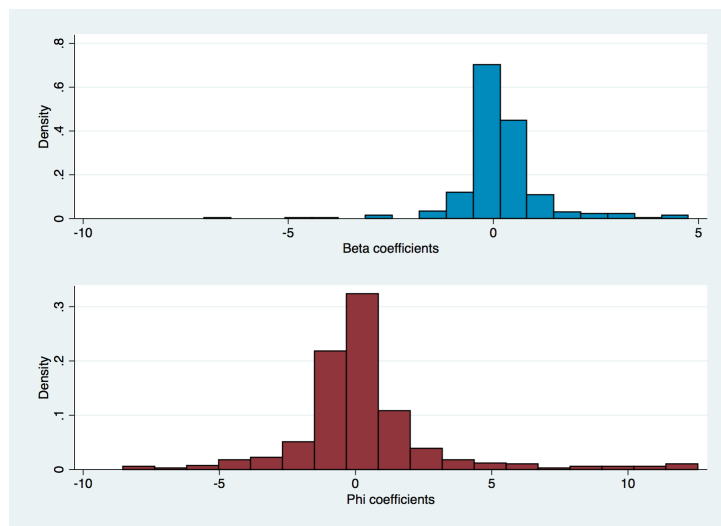
From the graphs, we can see that the values are dispersed around zero, both for what concern beta and phi. The range of values for phi is higher with respect to the range of values for beta (for phi, values go from -20 to 20, while for beta they go from -10 to 10).

## Urban Sample

When we analyze the urban sample, we find values for the mean and the median of beta (0.15 and 0.081) that are similar in magnitude to the ones for the whole sample, while the values for phi are a little bit both bigger (the mean is 0.30 and the median is 0.051). I would say that, overall, consumption insurance is achieved at the same level between the whole sample and the full sample.

	Mean	Median
Beta	0.15	0.081
Phi	0.30	0.051

Figure 2: "Histograms for Beta and Phi, Urban Sample"



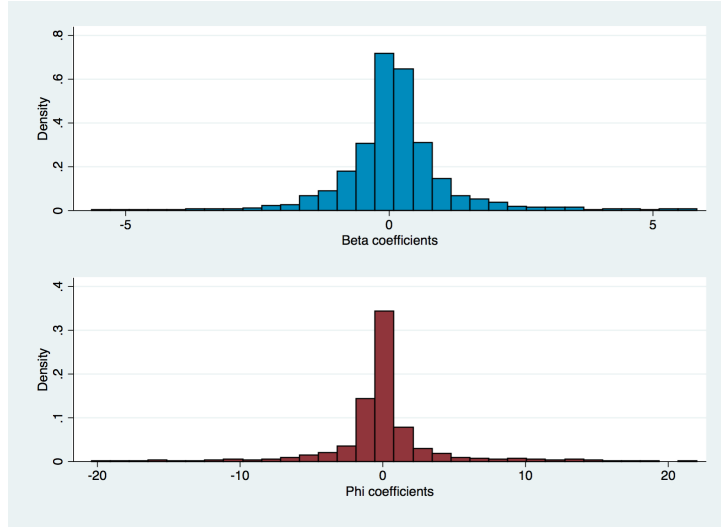
Nevertheless, the distribution for the beta has a left long tail, while the higher values are smaller than 5. The phi distribution also has less dispersed values, that are between -10 and +10.

## Rural Sample

Lastly, the values of the beta for the rural areas have also similar values to the whole sample and to the urban sample (with a mean equal to 0.122 and a median equal to 0.0832), which again could suggest almost a near total consumption insurance. The values of phi are much lower than the values of phi for the urban sample (with mean 0.0677 and negative median, equal to -0.0507).

	Mean	Median
Beta	0.122	0.0832
Phi	0.0677	-0.0507

Figure 3: "Histograms for Beta and Phi, Rural Sample"



## Question 2

Question 2 asks:

- "For each household, compute the average household income across all waves  $\bar{Y}_i$ . Rank individuals by income and define five groups of income from bottom 20% to richest 20%. Within each income group compute the mean and median  $\beta_i$  and discuss your results".
- Rank individuals by their estimated  $\beta_i$  and create five groups of individuals from the most insured bottom 20% (i.e.,  $\beta_i$  closest to zero) to the least insured top 20% (i.e.,  $\beta_i$  farthest away from zero). Within each group of  $\beta$ s compute average income and wealth across groups. Discuss your results.

## Total Sample

We have that Table 1 describe the mean and the median of beta, for each quintile of the income distribution. Unfortunately, it is not possible to infer any pattern from these numbers. The highest level of beta (that is, the group that has the lowest insurance for consumption) belongs to the group in the 2nd quintile. For the rest, the mean of betas is more or less around 0.1 for the other groups (that is, the results are similar to the ones in the total sample).

Table 1: Total Sample

	Q1	Q2	Q3	Q4	Q5	Total
Mean of Beta	0.0726	0.206	0.101	0.114	0.0837	0.115
Median of Beta	0.0827	0.0735	0.122	0.0613	0.0894	0.0858

The next table describe the mean income for each quintile of the beta distribution. We can see that, overall, the mean income is almost the same for each quintile, meaning that low values or high values of beta are not asymmetrically distributed in some part of the income distribution. It is not possible to see any clear monotonic relationship between the level of consumption

insurance and income (if I expect that richer people have a higher level of consumption insurance, I would expect to see higher income mean in lower quintiles of betas). Only considering quintiles from the 2nd to the 5th, we find a monotonic relationship, such that people with higher income have lower values of beta. This is consistent with the theory: I would expect that consumption insurance is more easily obtainable by people that earn higher incomes.

Table 2: Income by Beta's Quintiles

	Mean of Income
Q1	1357.6
Q2	1446.3
Q3	1416.9
Q4	1393.2
Q5	1351.1
Total	1393.0

## Urban Sample

Analyzing the result for the urban sample, we can see similar pattern to what happen for the whole sample. There is not a clear or evident pattern in the values of the coefficient. From some reasons, the lowest income quintile is the one that has the lowest values for beta (that are actually negative), which would mean again that the lowest quintile is the one that has the highest degree of consumption insurance.

Table 3: Urban Sample

	Q1	Q2	Q3	Q4	Q5	Total
Mean of Beta	-0.117	0.158	0.157	0.297	0.117	0.122
Median of Beta	-0.0710	0.0541	0.0766	0.159	0.128	0.0693

From the table below, we can notice that also the results of the income's mean by beta's quintiles are pretty similar to whole sample case: there is not a particular pattern in the betas. In fact, the mean income is almost the same in each quintile, meaning that there are not some income groups that have a consumption insurance that is higher, with respect to the other groups. We can

Table 4: Income by Beta's Quintiles

	Mean of Income
Q1	1357.6
Q2	1446.3
Q3	1416.9
Q4	1393.2
Q5	1351.1
Total	1393.0

## Rural Sample

The result for the rural sample are pretty similar to the whole sample and the urban sample: there is not a clear pattern on data about the beta coefficient values and income (so that, it does not seems that some income group have a higher consumption insurance, with respect to others).

Table 5: Rural Sample

	Q1	Q2	Q3	Q4	Q5	Total
Mean of Beta	0.135	0.243	0.0401	0.0454	0.157	0.124
Median of Beta	0.0862	0.132	0.0847	0.0581	0.0819	0.0885

(a) Income by Beta's Quintiles

Mean of Income	
Q1	1357.6
Q2	1446.3
Q3	1416.9
Q4	1393.2
Q5	1351.1
Total	1393.0

## Question 3

The table below gives the results of the regression where we don't use the heterogenous effect specification anymore (that is, we hypotize that the coefficient for consumption insurance, the beta, is equal between each person). We can see that full insurance is almost achieved (since the coefficients are smaller than 0.1) also if we consider the full sample together. The estimates are pretty similar between the different samples (unexpectdely, since we would have expected that people in rural areas would achieve an higher consumption insurance).

VARIABLES	(1) Delta Resid. Cons.	(2) Delta Resid. Cons.	(3) Delta Resid. Cons.
Delta Resid. Inc.	0.0671*** (0.00537)	0.0671*** (0.0108)	0.0664*** (0.00634)
Delta Aggr. Cons	-0.0148 (0.0115)	0.0527* (0.0280)	-0.0272** (0.0124)
Observations	6,209	1,091	4,876
Adjusted R-squared	0.025	0.034	0.023

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 6: Regression on differences of the residual of consumption over the residual of income and on aggregate consumption. The columns indicates: (1) Whole Sample (2) Urban Sample (3) Total Sample.