Development Economics: Homework 3

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Notes: I have dropped those households that were observed less than twice and those that have zero or missing consumption. To obtain aggregate consumption, I have computed it at the region and urban level due to the lack of availability of a smaller geographic unit. For the rest, I have proceed as instructed in the homework. In all the tables, I have dropped the bottom and top 1 % of β because there were some nonsensical outliers.

1   Individual insurance in log-level changes

The next three figures show the distribution of β and ϕ for the whole sample, rural and urban areas. Full insurance would suggest that β is close to zero. That is, changes in income should not drive changes in consumption if there is full insurance. Thus, the lowest the β, the higher the insurance. In contrast, ϕ should be high suggesting that individual consumption only moves with changes in aggregate consumption.

For the overall population of Uganda, we find that β is mainly centered around zero, suggesting that, on average, changes in personal income do not lead to big changes in consumption, and thus, insurance seems to hold. However, ϕ also seems to be centered around 0, which seems to point to the fact that changes in aggregate consumption at the region-urban/rural level do not lead to big changes in consumption in the individual level. This seems to suggest that, on the one hand, insurance holds because β is close to zero but, at the same time, consumption does not seem to move with aggregate consumption. This might be due to the fact that I am considering aggregate consumption at the region level and urban/rural level and, thus, the aggregate level may be to large to capture insurance. Ideally, one should use enumeration districts or village to compute these. However, in the data this level of detail was not available.

For the rural population (Figure 2), the picture seems to be very similar to the one for overall Uganda. However, it seems that there is more dispersion in urban areas. Moreover, the distribution for β seems to have more mass on the tails, which could suggest that there is less insurance in urban areas (i.e. changes in individual income lead more often to changes in consumption). ϕ seems also to be more concentrated around zero, suggesting also lower insurance

Table 1 shows the mean and median for β and ϕ for overall Uganda and rural and urban areas respectively. First, the medians of β seem to be in line with the histograms, they are all close to zero. The median of β for the entire Uganda is 0.09, suggesting that full insurance does not hold but there is some insurance, since changes in income lead to small changes in individual consumption. However, notice that in rural areas, the insurance seems to be the same as for overall Uganda. However, insurance would seem to hold more in urban areas, since the mean and median are lower. Even if I have trimmed the β, there might be some outliers driving these results. As for ϕ, the results seem to contradict the fact that changes in consumption should be driven by changes in aggregate consumption. Once again, this may be due to the fact that aggregate consumption at the region level does not allow to capture insurance if insurance happens at a smaller level, like the village. Moreover, the negative signs are counter-intuitive.
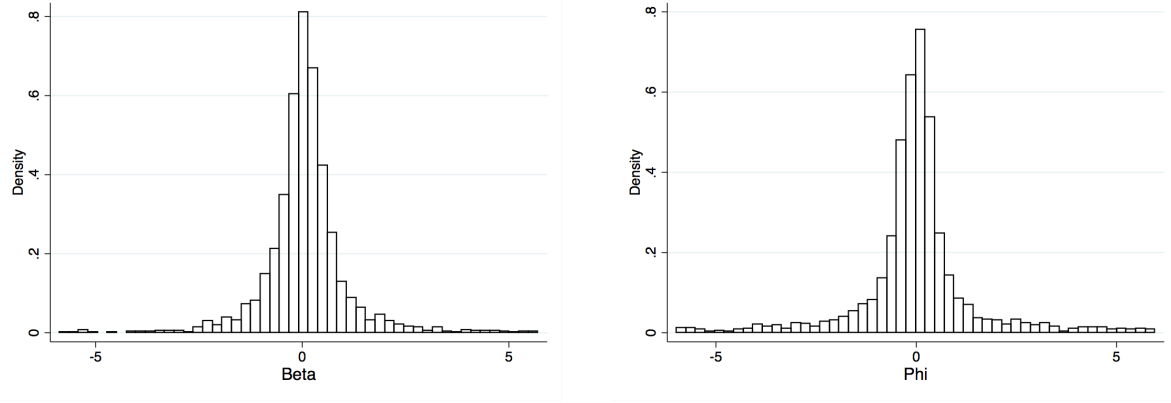
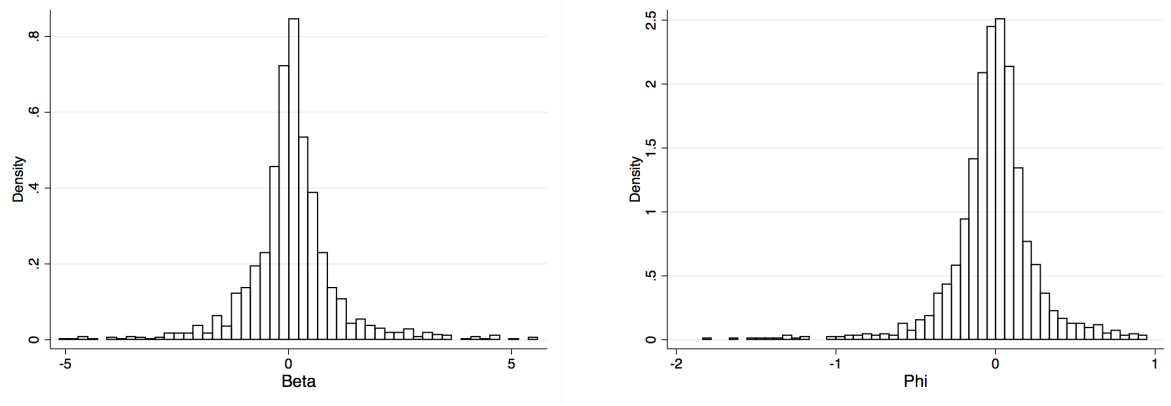# Figure 1: Distribution of β and ϕ

Figure 2: Distribution of β and ϕ in rural areas

Figure 3: Distribution of β and ϕ in urban areas
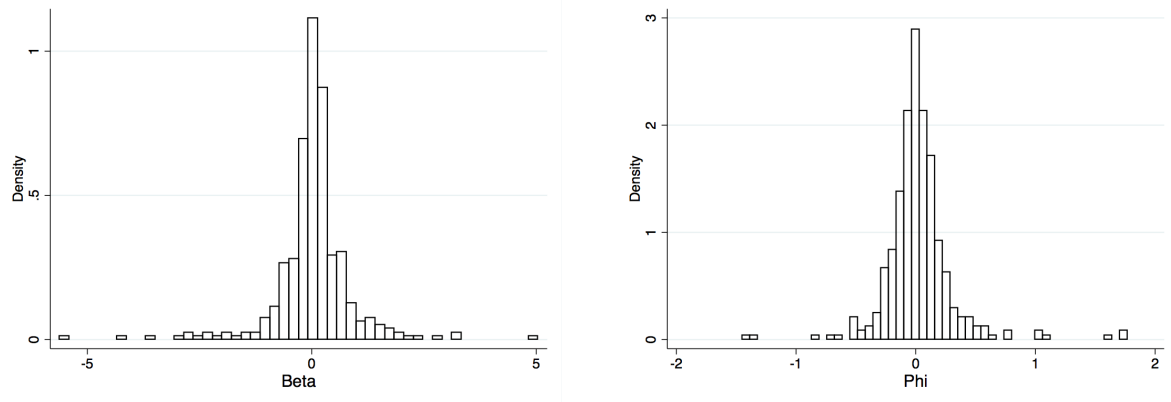
Table 1: Summary statistics

Overall Uganda	Mean	Median
β	0.09	0.071
ϕ	0.04	0.017

Rural Uganda	Mean	Median
β	0.09	0.07
ϕ	-0.008	0.0009

Urban Uganda	Mean	Median
β	0.05	0.05
ϕ	0.026	-0.016

2 On the relationship between insurance and household income

2.1 Insurance and average household income

Table 2 reports the mean and median of β for each quantile of the income distribution in the whole Uganda, rural and urban Uganda. One would expect that insurance is much lower for higher income quantiles (i.e. β is higher). However, there does not seem to be a monotonic relationship between income and insurance. For the first two quantiles, β are very similar. Moreover, the highest insurance (lowest β) is found at the fourth quantile. It would seem that insurance is highest in the upper part of the income distribution rather than in the bottom. For rural areas, we get a similiar picture and insurance seems higher at the fourth quintile. For urban areas, highest insurance is in the middle of the distribution.

2.2 Distribution of insurance and income

Table 3 shows the mean and median of log income according to the quintile in the distribution of β (highest quintiles imply lower insurance). Related to the previous discussion, one should expect that income is higher the highest the quantile of beta. For overall Uganda, this seems to hold fairly but log income is actually higher in the bottom quantile than in the second, third and fourth. This seems to corroborate the previous table. The same happens for rural and urban areas. All in all, this results seem to be in line with those of table 2: the relationship between income and insurance is not linear and there can be high insurance for high levels of income.

Table 2: Summary statistics

	Q1		Q2		Q3		Q4		Q5	
Overall Uganda										
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
β	0.14	0.10	0.14	0.10	0.10	0.07	0.01	0.02	0.045	0.038
Rural Uganda										
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
β	-0.018	0.025	0.21	0.13	0.12	0.07	0.09	0.05	0.10	0.08
Urban Uganda										
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
β	0.14	0.10	0.05	0.07	0.03	0.03	-0.02	-0.013	0.2	0.05

Table 3: Summary statistics

	Q1		Q2		Q3		Q4		Q5	
Overall Uganda										
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
(log) Income	6.63	6.61	6.55	6.43	6.34	6.45	6.29	6.36	6.54	6.61
Rural Uganda										
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
(log) Income	6.47	6.51	6.38	6.51	6.33	6.42	6.39	6.45	6.55	6.57
Urban Uganda										
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
(log) Income	6.68	6.96	6.56	6.7	6.33	6.56	6.48	6.72	6.76	6.87

3 Overall insurance

VARIABLES	(1) $\triangle$ (log)	(2) $\triangle$ (log)	(3) $\triangle$ (log)
β	0.0634***	0.0565***	0.0677***
	(0.00554)	(0.00672)	(0.0107)
ϕ	0.0104	-0.0103**	0.0128
	(0.00848)	(0.00522)	(0.00977)
Observations	6,007	4,472	1,064
Adjusted R-squared	0.022	0.016	0.036
Sample	Overall	Rural	Urban

Standard errors in parentheses

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

Table 3 shows the results of the regressions of the change in log consumption on the change of log income and aggregate consumption (at the region-urban/rural level). Even if before there seemed to be some contradictions, these results show that there is more insurance in rural areas (β is lower) than in urban areas. Notice also that for the overall panel, changes in aggregate consumption do not lead to significant changes in personal consumption. Notice, however, that this coefficient is only significant for the rural subsample, but with the opposite sign as would be expected. The contradiction with the previous results may be due to the fact that for all the previous results we are fitting, at most, 4 regressions for each individual, which can lead to very imprecise and nonsensical estimates.