Growth and Development Economics

Homework 3

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1 Individual insurance in log-level changes

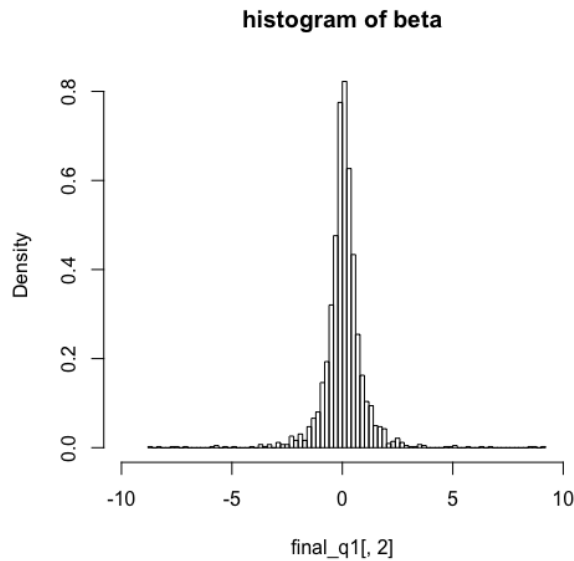### 1.1 Histograms

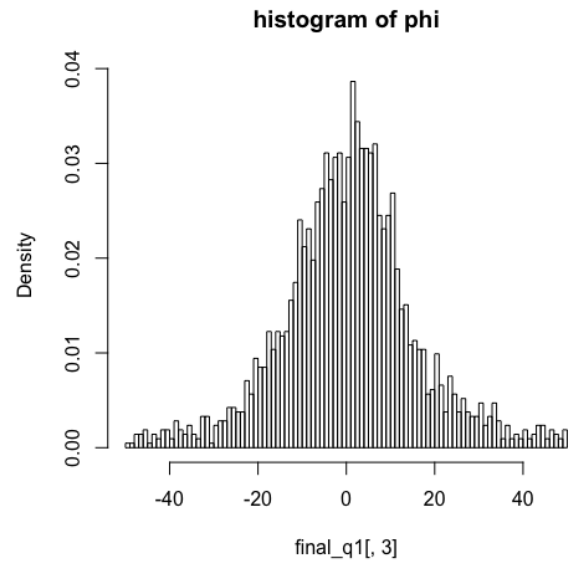Figure 1: Histogram of β_i

Figure 2: Histogram of ϕ_i

From the histograms, we see that β_1 is centered around 0, with mean equals to 0.05569 and median equals to 0.04962. To be full risk sharing, we expect β_i to be zero. To some extent this is true. However, ϕ_is are slightly less than 1, with mean equals to 0.60643 and median equals to 0.91220. What's more, distribution of ϕ_i disperses a lot, which suggests that consumption is not fully insured.

1.2 Mean and Median

Table 1 Mean and Median of β_1 and ϕ_i

estimates	β_1	ϕ_i
mean	0.05569	0.60643
median	0.04962	0.91220

2 Relationship between insurance and household income

2.1 question (a)

For each household, compute the average household income across all waves. 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 β_i.

Table 2 Mean and median of β_i across income quantiles

quantile of income	20%	40%	60%	80%	100%
mean of β_i	0.04188	0.07455	0.08012	0.08237	-0.00078
median of β_i	0.07222	0.04671	0.05309	0.05639	0.03552

2.2 question (c)

Rank individuals by their estimated β_i and create five groups of individuals from the most insured bottom 20% (i.e, β_i closest to zero) to the least insured top 20% (i.e., β_i farthest way from zero). Within each group of β_i's compute average income across groups.

Table 3 Mean and median of income across β_i quantiles

quantile of β_i	20%	40%	60%	80%	100%
mean of income	1503.22	1524.77	1380.47	1374.95	1299.16
median of income	860.64	913.91	903.69	874.47	847.42

3 When coefficients are the same across households

- $\beta = 0.06384$
- $\phi = 0.14806$

When coefficients are the same across households, β is nearly zero while ϕ is very small. Relationship between household consumption and aggregate consumption is weak. Full risk sharing is not achieved.
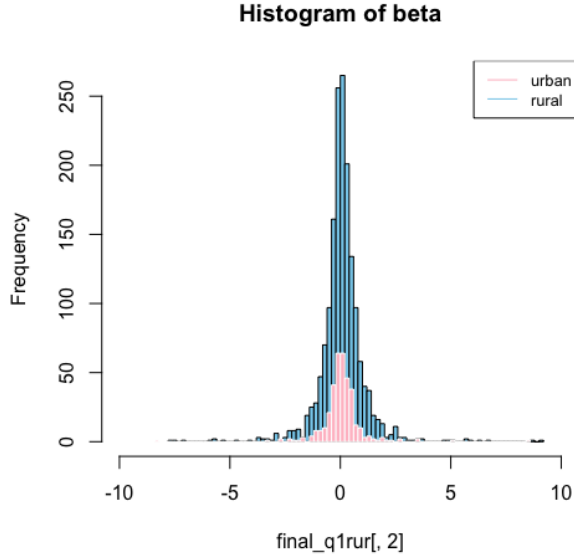
4 Separate Rural and Urban
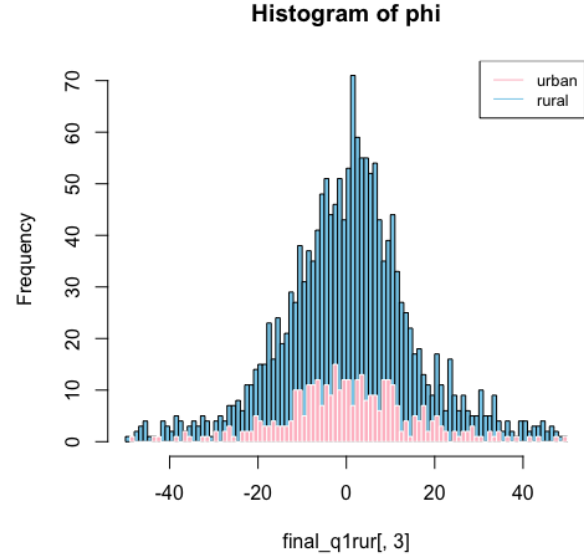
4.1 Histograms

Figure 3: Histogram of β_i

Figure 4: Histogram of ϕ_i

In urban areas, distribution of parameters are more disperse, suggesting that urban people are less insured.

4.2 Mean and Median

Table 4 Mean and Median of β_1 and ϕ_i

estimates	β_1	ϕ_i
mean (urban)	0.04764	0.56498
median (urban)	0.03437	0.15121
mean (rural)	0.07128	0.65946
median (rural)	0.05490	1.04635

4.3 Relationship between insurance and household income

Table 5 Mean and median of β_i across income quantiles (urban and rural)

quantile of income	20%	40%	60%	80%	100%
mean of β_i (urban)	0.23847	-0.02777	-0.02380	0.08951	-0.04877
median of β_i (urban)	0.10109	0.04201	-0.02003	0.00578	0.03354
mean of β_i (rural)	-0.00042	0.09211	0.10432	0.08773	0.07238
median of β_i (rural)	0.04010	0.07940	0.03984	0.05414	0.04608

Table 6 Mean and median of income across β_i quantiles

quantile of β_i	20%	40%	60%	80%	100%
mean of income (urban)	1728.39	1829.72	1798.39	1750.34	1931.53
median of income (urban)	948.54	929.18	1066.52	1128.48	1090.18
mean of income (rural)	1480.94	1379.60	1366.60	1304.35	1241.54
median of income (rural)	866.29	892.04	885.11	813.92	840.18

In each β quantile group, income in urban areas are higher than that in rural areas, implying urban people are richer. Increasing β leads to decreasing in rural income but ambiguous (maybe positive) effect on urban income. Hence in urban areas, there is less risk sharing. Urban consumption is more likely to come from income.

4.4 When coefficients are the same across households

Table 7 β and ϕ (coefficients are the same across households)

	β	ϕ
urban	0.06862	0.40294
rural	0.05601	0.29473