

Development Economics - Homework 1

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1 Inequality in consumption, income and wealth (CIW)

For the sake of interpretation, all the monetary values are converted from the Uganda currency into US dollars (2013).

1.1 Report average CIW per household separately for rural and urban areas.

Figure 1 presents the average CIW for Uganda separated by urban and rural areas. Notice that the differences between urban and rural areas are more prominent in wealth and income than in consumption. These results seem to be in line with the ones for Malawi.

Figure 1: Average CIW per household

	Urban	Rural
Consumption	1.109,5	634,4
Income	5.817,6	1.409,8
Wealth	7.198,3	2.568,9

These figures are not very meaningful *per se*, so let's observe what happens in the distribution in the next question.

1.2 CIW inequality: (1) Show histogram for CIW separately for rural and urban areas; (2) Report the variance of logs for CIW separately for rural and urban areas.

By looking at the three histograms, it seems that CIW is higher in urban areas rather than rural as we can observe that the distribution is more moved towards the right. Notice also that most of the density is accumulated at the bottom of the distribution for the rural areas.

Figure 2: Consumption

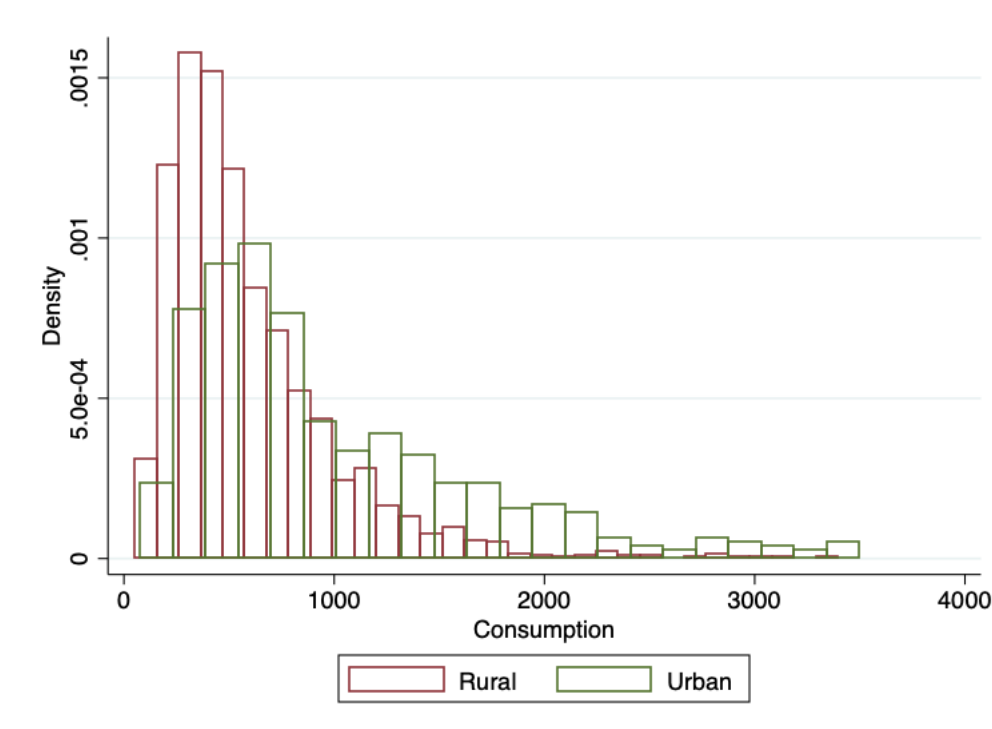


Figure 3: Income

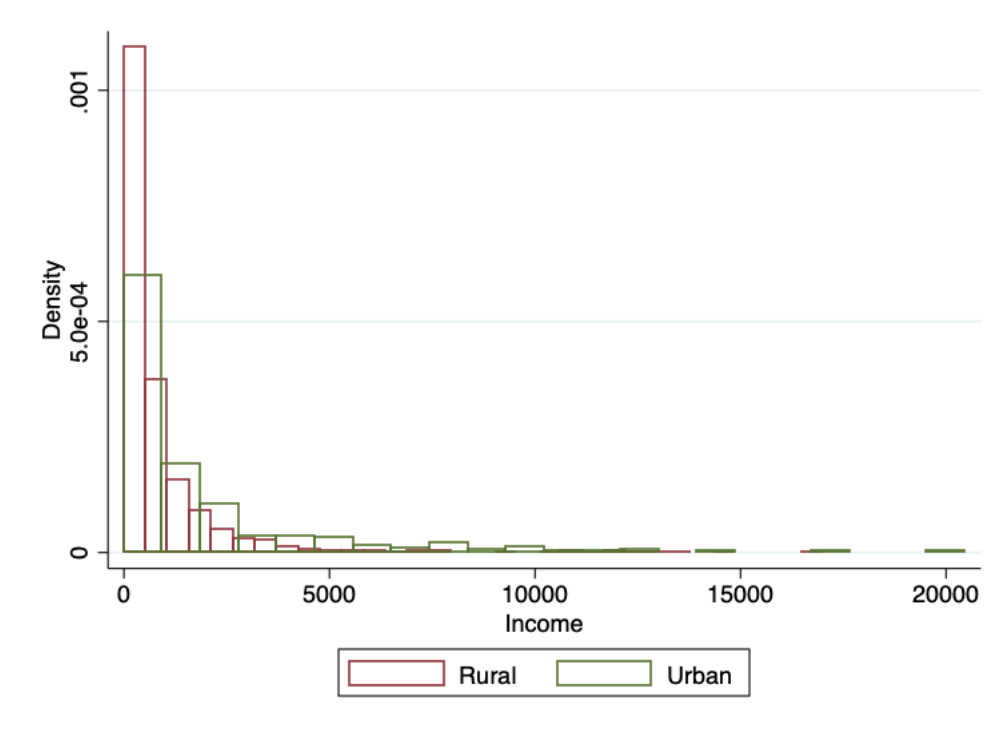


Figure 4: Wealth

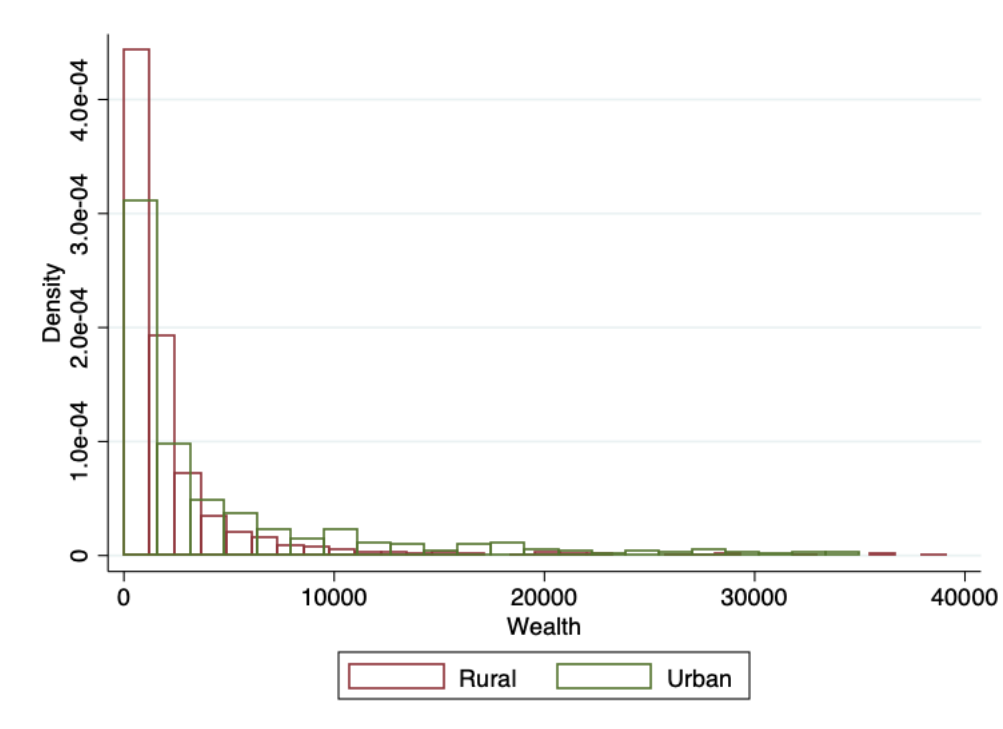


Figure 5: Variance of logs CIW

Variance of logs for CIW		
	Urban	Rural
Consumption	0,57	0,39
Income	2,34	1,55
Wealth	2,30	1,20

Figure 5 presents the variance of logarithms of CIW. If one compares the results with the ones presented in class, it can be observed that income inequality is higher than in the U.S. (0.99) and Malawi (0.98 and 1.56, for rural and urban respectively).

However, wealth inequality seems to be smaller in Uganda than in the U.S. (1.49 and 4.52, for rural and urban respectively) or Malawi (4.53).

Finally, the dispersion in consumption is lower than in income and wealth.

1.3 Describe the joint cross-sectional behavior of CIW.

On the one hand, Figure 6 shows that the correlation between consumption and income in Uganda (0.49) is smaller than in U.S. (0.68), but very close to the one in Malawi (0.49). In Uganda, one can see that this correlation is higher in the urban areas rather than the rural ones.

On the other hand, the correlation between income and wealth in Uganda (0.33) is also smaller than in the U.S (0.57) and similar to the one in Malawi (0.31). Again, this correlation is higher in urban than in rural areas.

Figure 6: Correlation CIW, rural and urban areas

	consum~n	income	wealth
consumption	1.0000		
income	0.4949	1.0000	
wealth	0.5717	0.3362	1.0000

Figure 7: Correlation CIW, rural areas

	consum~n	income	wealth
consumption	1.0000		
income	0.4163	1.0000	
wealth	0.4865	0.2710	1.0000

Figure 8: Correlation CIW, urban areas

	consum~n	income	wealth
consumption	1.0000		
income	0.5288	1.0000	
wealth	0.6097	0.3484	1.0000

These results give a little bit of evidence that even if there is dispersion in income it is not spend in more consumption or accumulation of wealth. As discussed in class, the reasons why income is not transmitted into wealth can be: (1) lack of markets, (2) big redistribution.

1.4 Describe the CIW level, inequality, and covariances over the lifecycle.

In terms of levels, consumption over the lifecycle seems to be relatively constant and hump-shaped (less consumption when young and old, and more consumption when middle-aged).

Instead, wealth presents an increasing trend over time, meaning that there is accumulation of wealth over time. However, this trend is much lower than the one presented by U.S.

Apparently, income and wealth inequality seem to be more pronounced after the age of 20, probably because it is when individuals start taking different paths in terms of occupation (possible a lot of people working in agriculture and very few higher-earners that are able to accumulate wealth. Also, it seems there is not many inequality in terms of consumption.

Figure 9: CIW level over the lifecycle

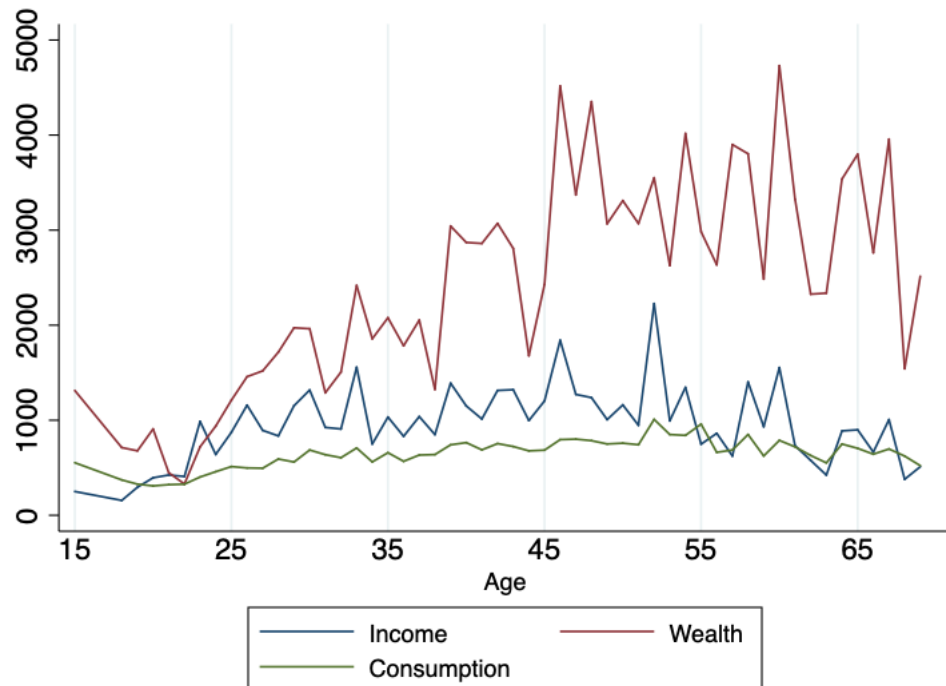
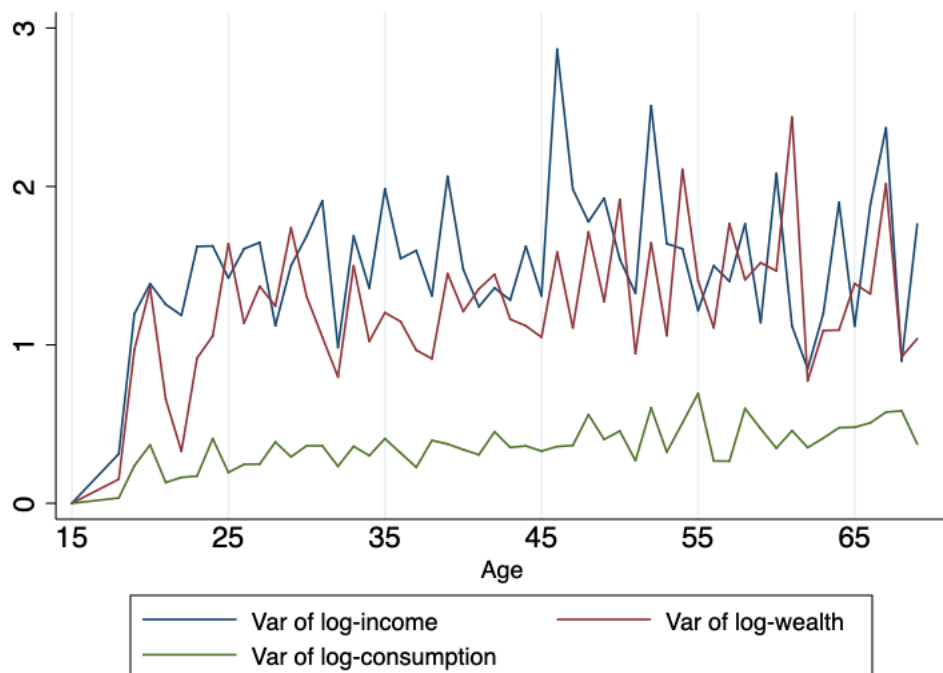


Figure 10: CIW inequality over the lifecycle



1.5 Rank your households by income, and discuss the behavior of the top and bottom of the consumption and wealth distributions conditional on income.

Figure 11: Behavior of the top and bottom of the consumption

cum_income_wealth				
	Percentiles	Smallest		
1%	57978.54	724.5397		
5%	175631	927.7012		
10%	344065.5	1433.774	Obs	2,487
25%	1020225	1595.23	Sum of Wgt.	2,487
50%	2395694		Mean	2925795
		Largest	Std. Dev.	2299104
75%	4658346	9378253		
90%	6257975	9380390	Variance	5.29e+12
95%	7644245	9385490	Skewness	.7476493
99%	8932468	9391321	Kurtosis	2.694288

Figure 12: Behavior of the top and bottom of the wealth

cum_income_cons				
	Percentiles	Smallest		
1%	9306.559	317.7108		
5%	45838.29	470.2568		
10%	95996.97	650.1443	Obs	2,487
25%	252425.2	808.9479	Sum of Wgt.	2,487
50%	601472.3		Mean	681457
		Largest	Std. Dev.	486981.6
75%	1058105	1815685		
90%	1406881	1816407	Variance	2.37e+11
95%	1579565	1818510	Skewness	.477782
99%	1766098	1819837	Kurtosis	2.150903

In Figure 11 and 12, it can be observed that the difference between the top and bottom of the distributions conditional on income is much higher for consumption than for wealth, and this is consistent with the previous results.

2 Inequality in Labor Supply

2.1 Redo Question 1 for intensive and extensive margins of labor supply.

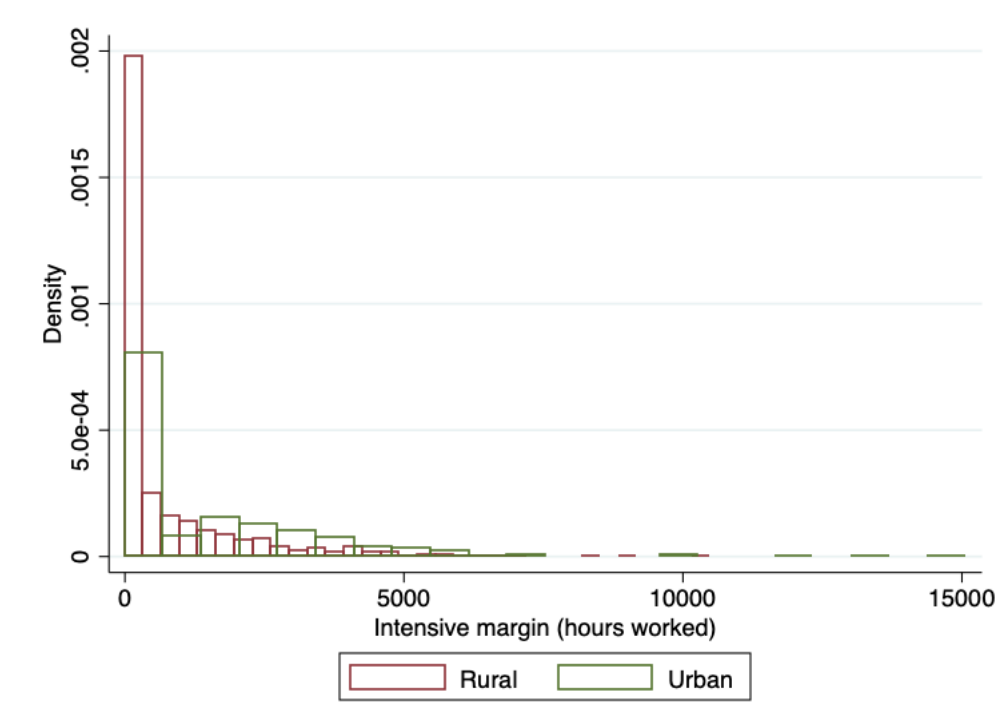
2.1.1 Report average labor supply per household separately for rural and urban areas.

The average labor supply (measured by hours worked in 2013) for rural and urban areas is:

- Urban and rural areas: 784.38
- Urban area: 1338.86
- Rural area: 629.77

2.1.2 Labor supply inequality: (1) Show histogram for labor supply separately for rural and urban areas; (2) Report the variance of logs for labor supply separately for rural and urban areas.

Figure 13: Intensive margin (hours worked)



The variance of logs for labor supply for rural and urban areas:

- Urban and rural areas: 1.52
- Urban area: 1.81
- Rural area: 1.41

Even though there are not big difference across urban and rural areas, the dispersion in the labor supply is higher in the urban areas.

2.1.3 Describe the labor supply level, inequality, and covariances over the lifecycle.

Figure 14 shows the labor supply over the lifecycle and it can be observed that labor supply has a hump shape, i.e. individuals work less hours at the beginning and at the end of their “labor life”, while they work more hours when they are middle-aged.

Figure 14: Labor supply level over the lifecycle

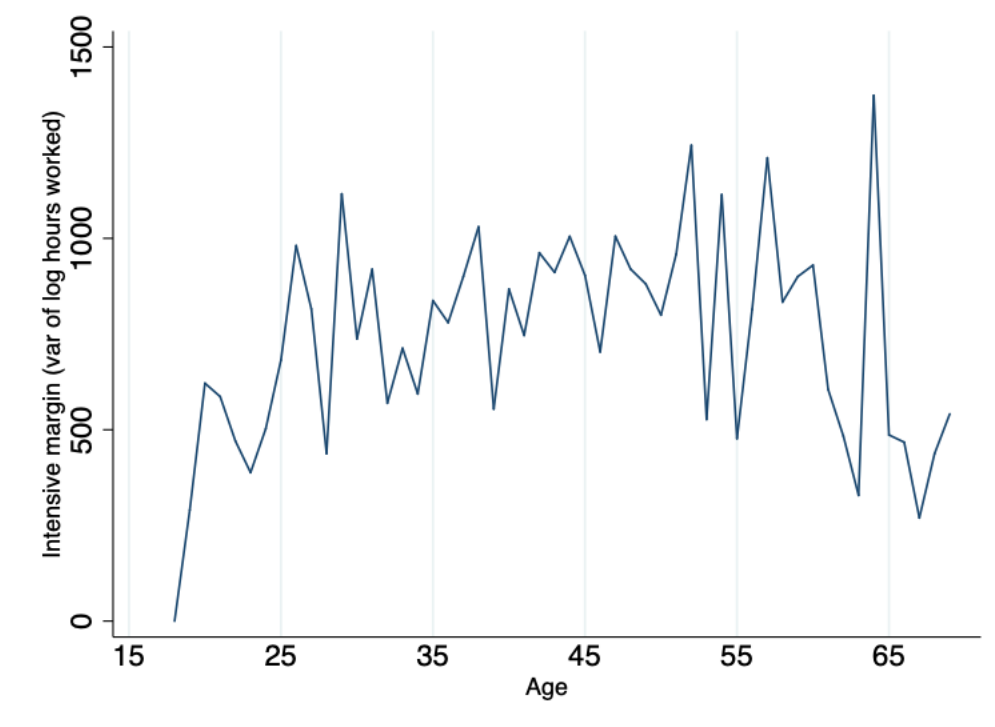
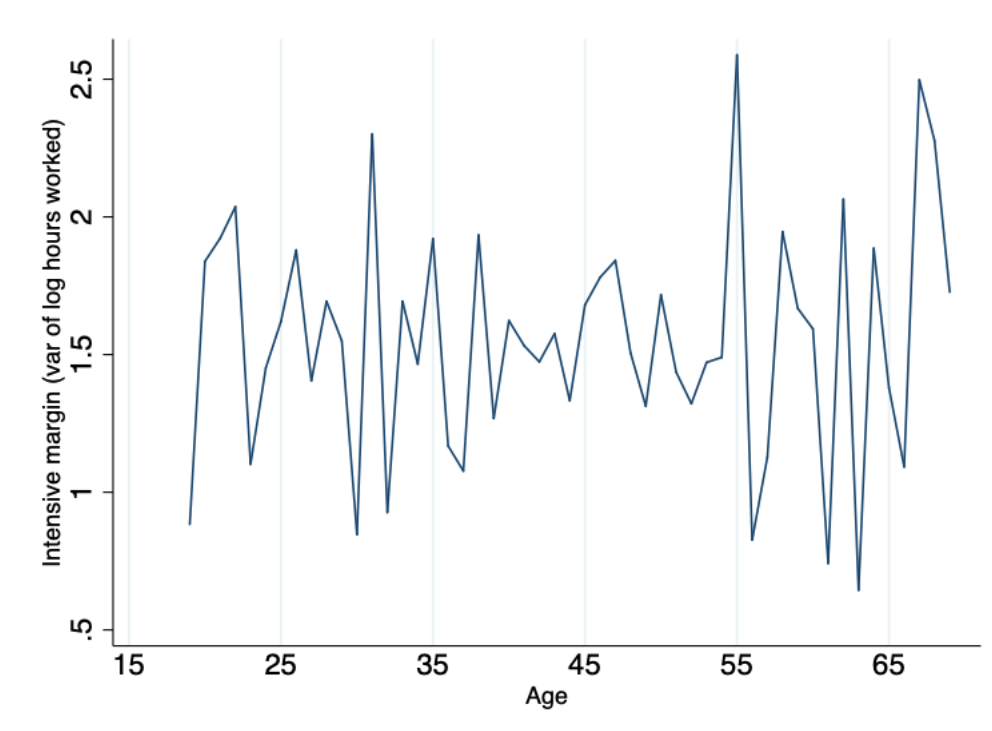


Figure 15: Labor supply inequality over the lifecycle



2.2 Redo separately for women and men.

2.2.1 Report average labor supply per household separately for rural and urban areas.

The average male labor supply (measured by hours worked in 2013) for rural and urban areas is:

- Urban and rural areas: 799.07
- Urban area: 1220.46
- Rural area: 683.22

The average female labor supply (measured by hours worked in 2013) for rural and urban areas is:

- Urban and rural areas: 749.95
- Urban area: 1606.30
- Rural area: 503.29

Apparently, the amount of hours worked in rural areas is higher for male than for female; whereas the amount of hours worked in urban areas is larger for females than for males.

2.2.2 Labor supply inequality: (1) Show histogram for labor supply separately for rural and urban areas; (2) Report the variance of logs for labor supply separately for rural and urban areas.

Figure 16: Intensive margin (hours worked), for men

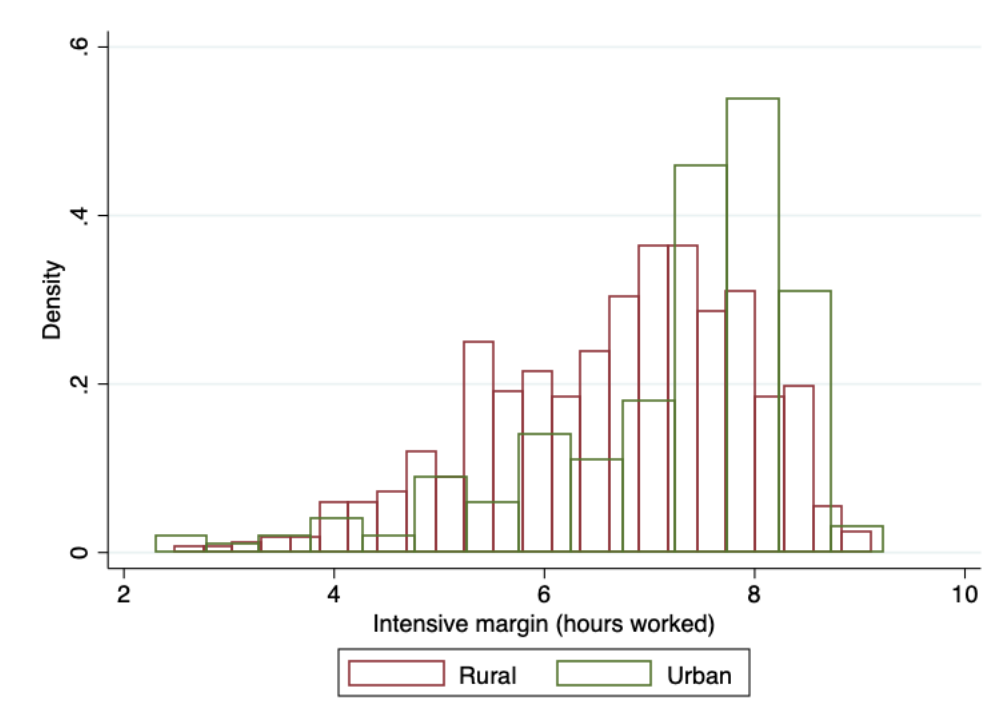
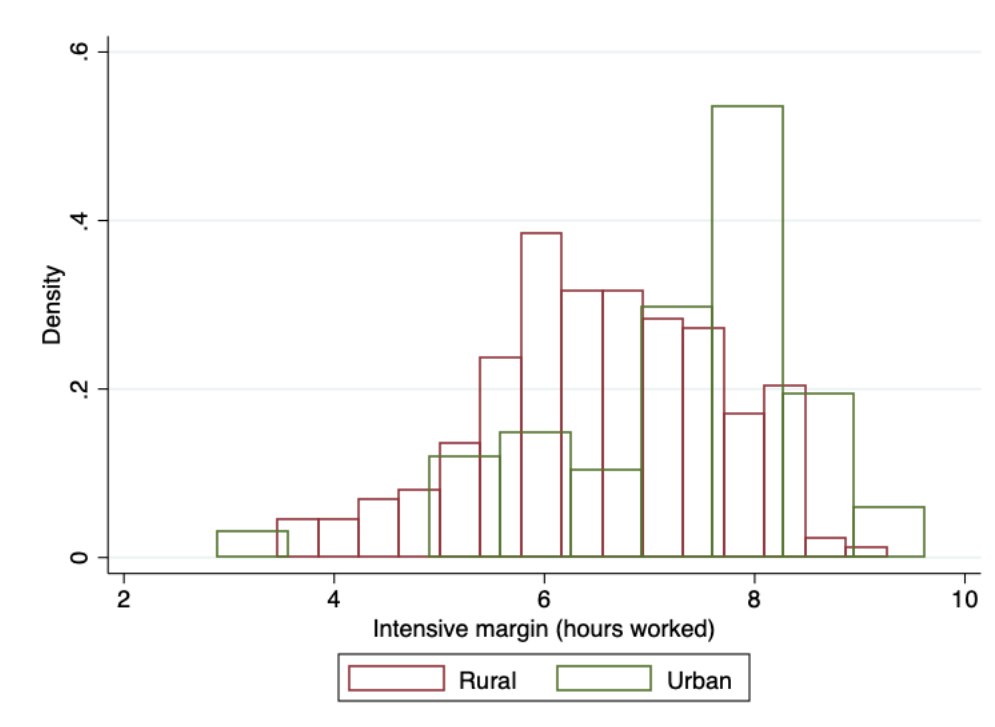


Figure 17: Intensive margin (hours worked), for women



The male variance of logs for labor supply for rural and urban areas is:

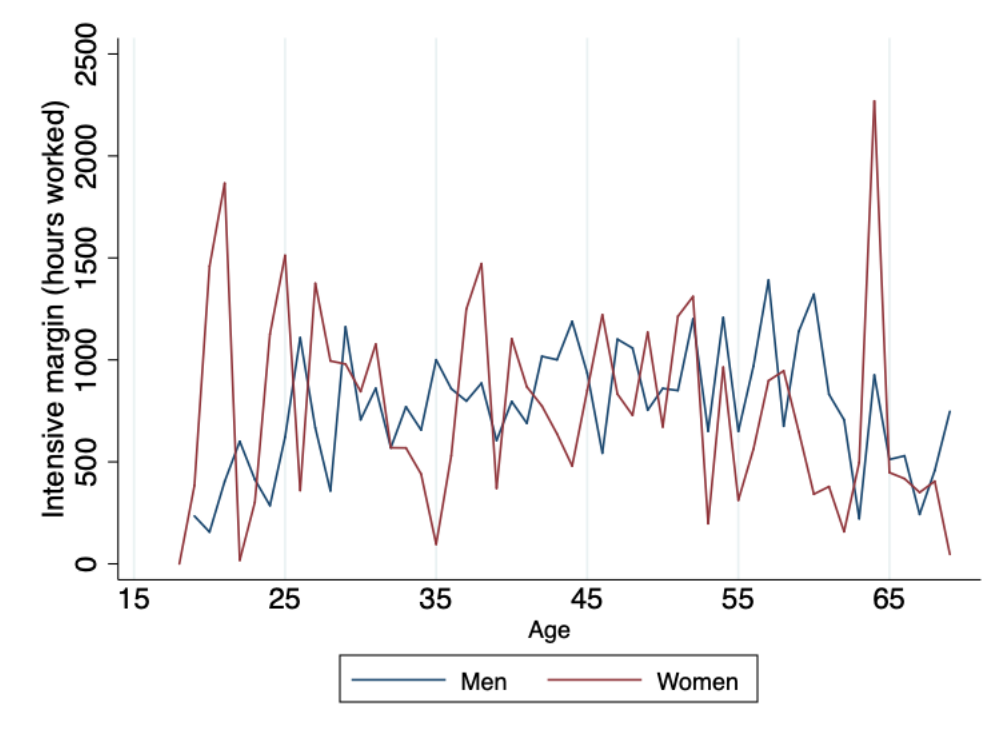
- Urban and Rural areas: 1.56
- Urban area: 1.83
- Rural area: 1.47

The female variance of logs for labor supply for rural and urban areas is:

- Urban and Rural areas: 1.41
- Urban area: 1.79
- Rural area: 1.25

2.2.3 Describe the labor supply level, inequality, and covariances over the lifecycle.

Figure 18: Labor supply level over the lifecycle

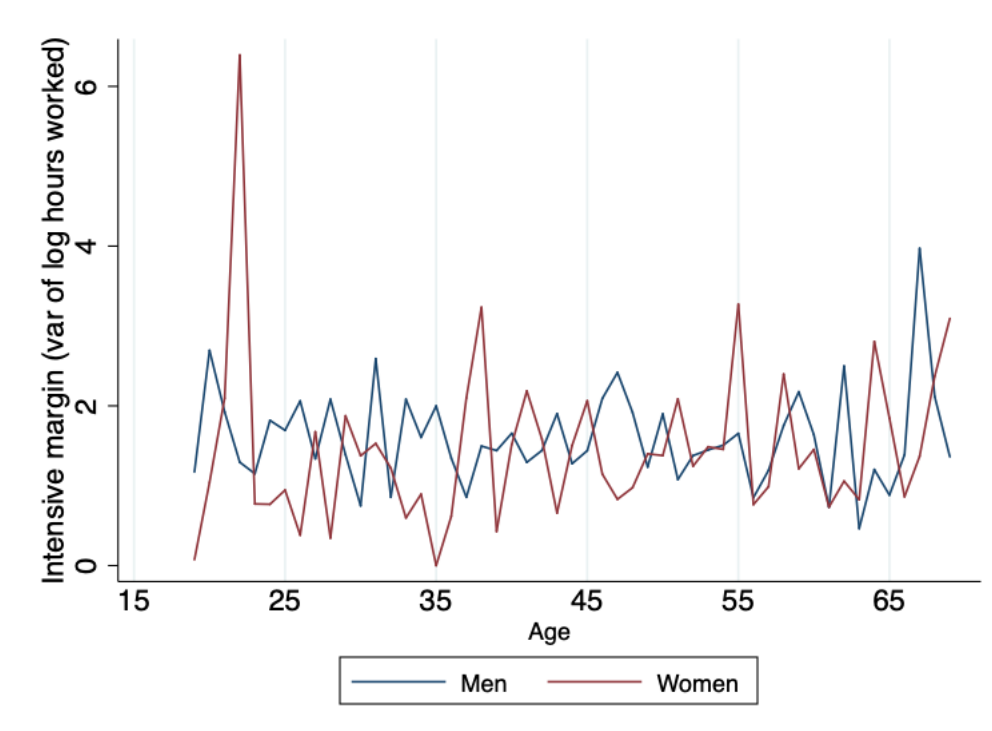


2.3 Redo separately by education groups (less than primary school completed, primary school completed, and secondary school completed or higher).

Notice that the education levels are divided in the following way:

- Less than primary school (1).
- Less than high school (2).
- High school or more (3).

Figure 19: Labor supply inequality over the lifecycle



2.3.1 Report average labor supply per household separately for rural and urban areas.

The average labor supply (measured by hours worked in 2013) for rural and urban areas and less than primary school is:

- Urban and rural areas: 592.62
- Urban area: 987.77
- Rural area: 531.51

The average labor supply (measured by hours worked in 2013) for rural and urban areas and less than high school is:

- Urban and rural areas: 705.07
- Urban area: 1143.58
- Rural area: 570.24

The average labor supply (measured by hours worked in 2013) for rural and urban areas and high school or more is:

- Urban and rural areas: 1143.58
- Urban area: 1199.29
- Rural area: 1477.23

The average hours worked per year are higher for the individuals with the highest level of education. Additionally, the hours worked are larger in urban rather than rural areas for the lowest levels of education. The opposite seems to be happening when one compares the yearly working hours in rural and urban areas for those individuals with higher educational attainment.

2.3.2 Labor supply inequality: (1) Show histogram for labor supply separately for rural and urban areas; (2) Report the variance of logs for labor supply separately for rural and urban areas.

Figure 20: Intensive margin (hours worked), for less than primary

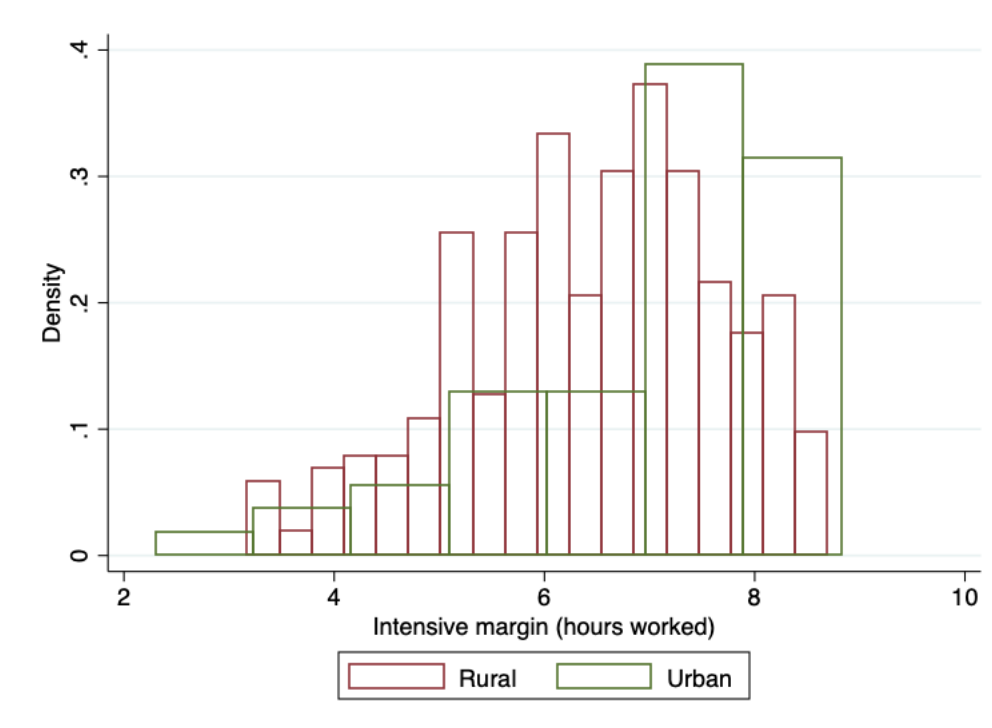


Figure 21: Intensive margin (hours worked), for less than high school

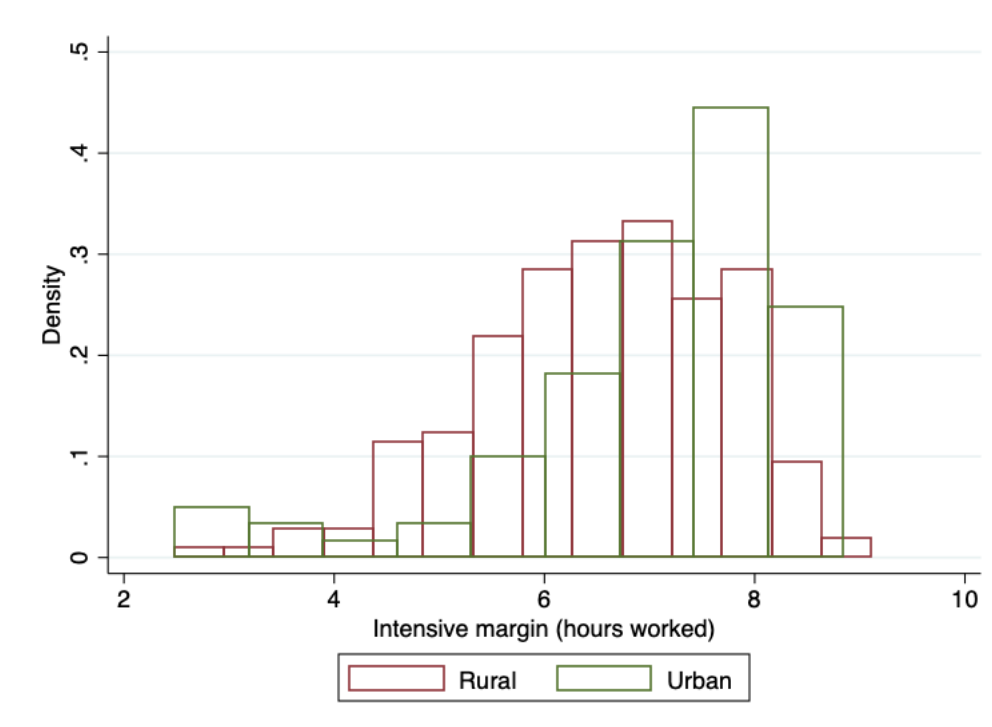
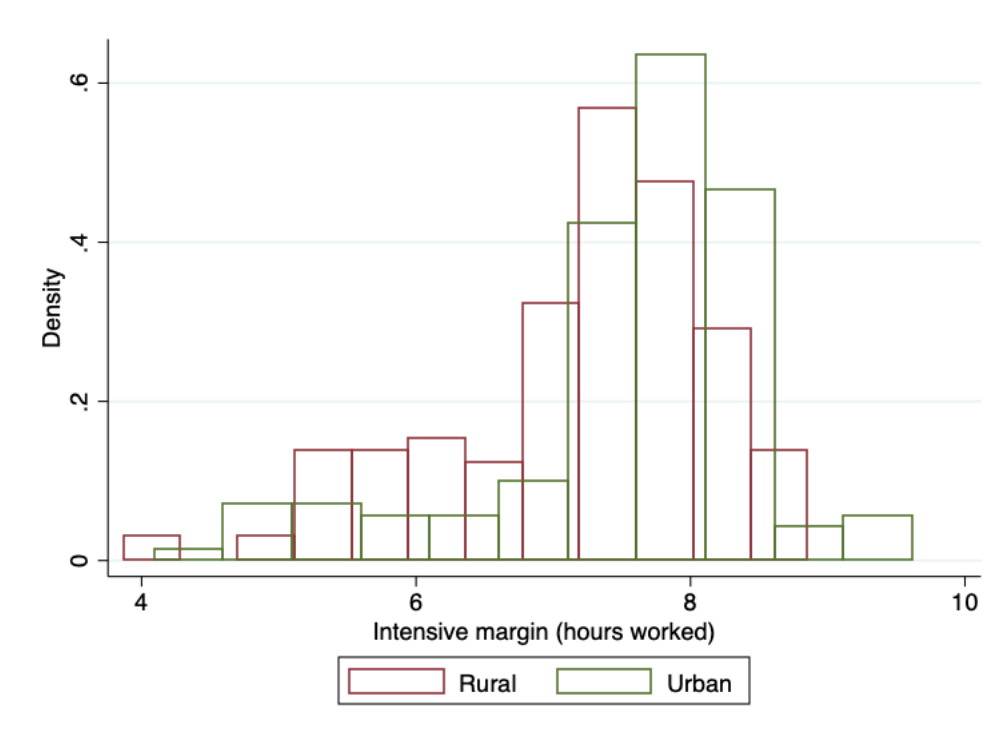


Figure 22: Intensive margin (hours worked), for high school or more



Figures 20, 21 and 22 show the usual pattern: urban areas accumulate more density at the top distribution relative to the rural areas.

2.3.3 Describe the labor supply level, inequality, and covariances over the lifecycle.

Figure 23: Labor supply level over the lifecycle

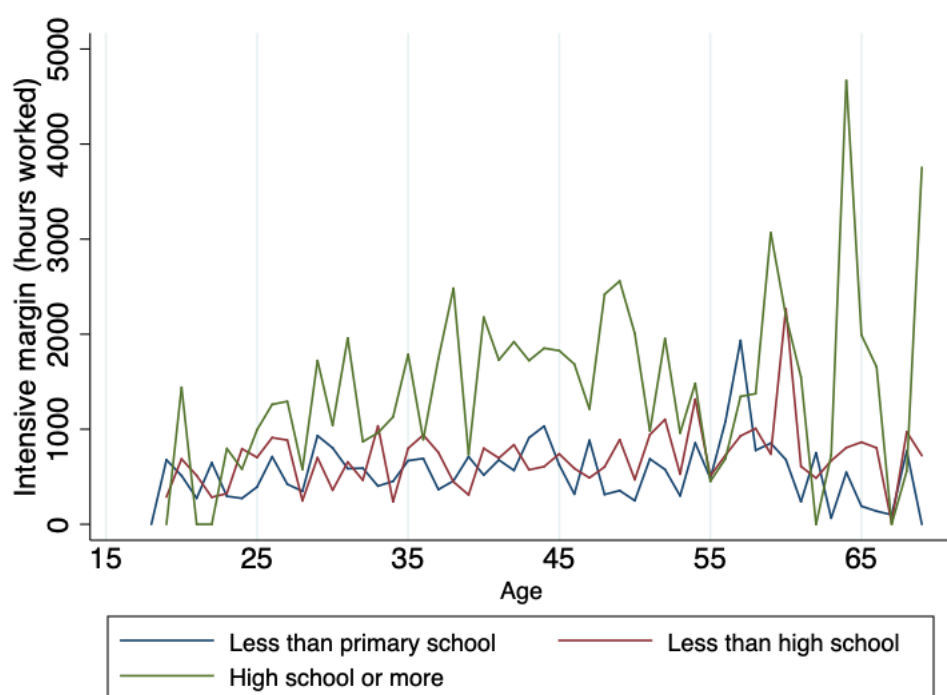
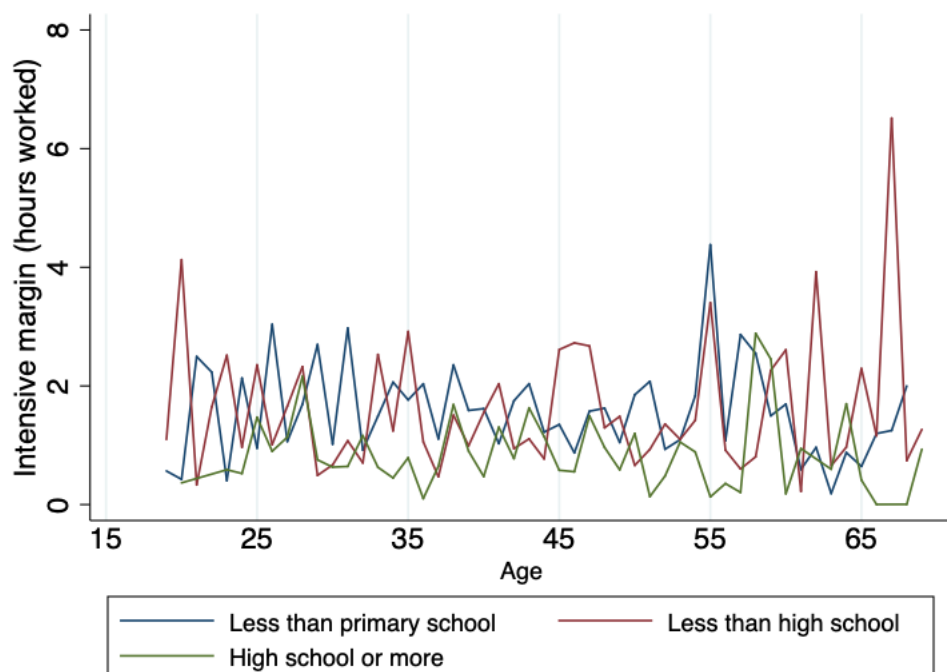


Figure 24: Labor supply inequality over the lifecycle



The variance of logs for labor supply for rural and urban areas and less than primary school is:

- Urban and rural areas: 1.55
- Urban area: 2.24
- Rural area: 1.44

The variance of logs for labor supply for rural and urban areas and less than high school is:

- Urban and rural areas: 1.52
- Urban area: 1.98
- Rural area: 1.35

The variance of logs for labor supply for rural and urban areas and high school or more is:

- Urban and rural areas: 0.96
- Urban area: 1.03
- Rural area: 0.91

As can be observed, the lower the education level is, the higher the dispersion in hours worked is both in urban and rural areas.

3 Inequality Across Space

3.1 Plot the level of CIW and labor supply by zone (or district) against the level of household income by zone.

Figure 25: Level of consumption and labor supply by zone

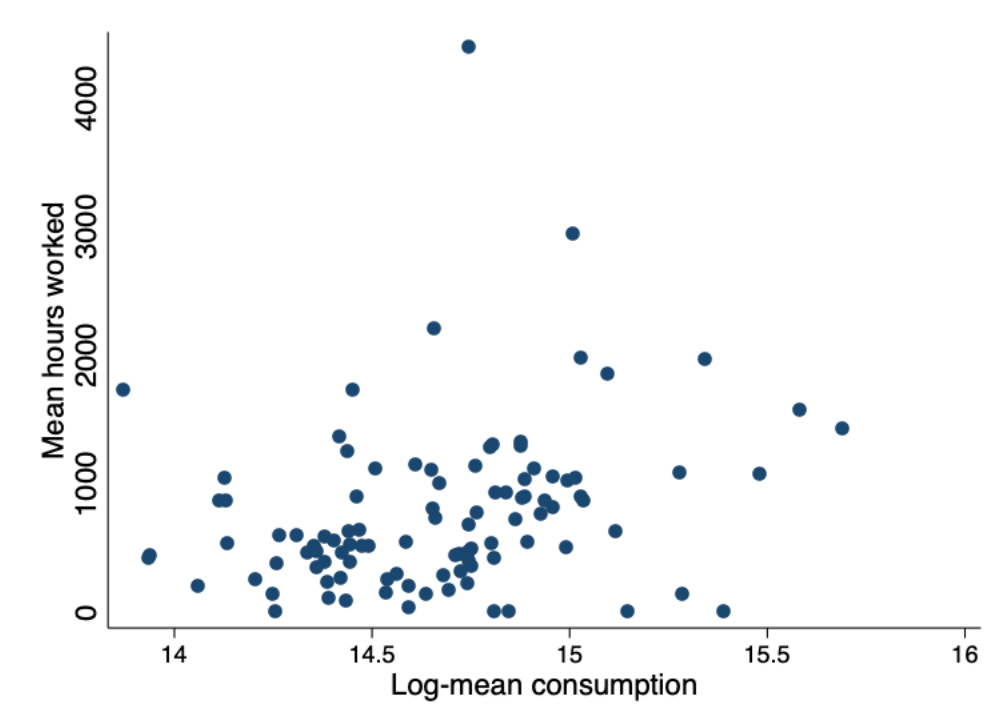


Figure 26: Level of income and labor supply by zone

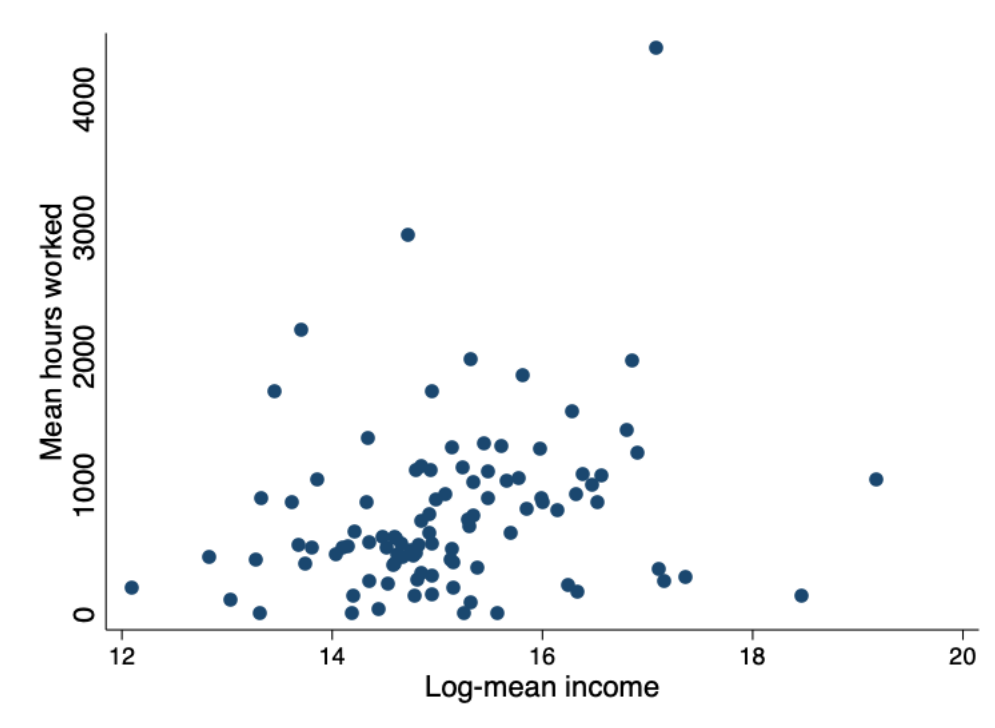
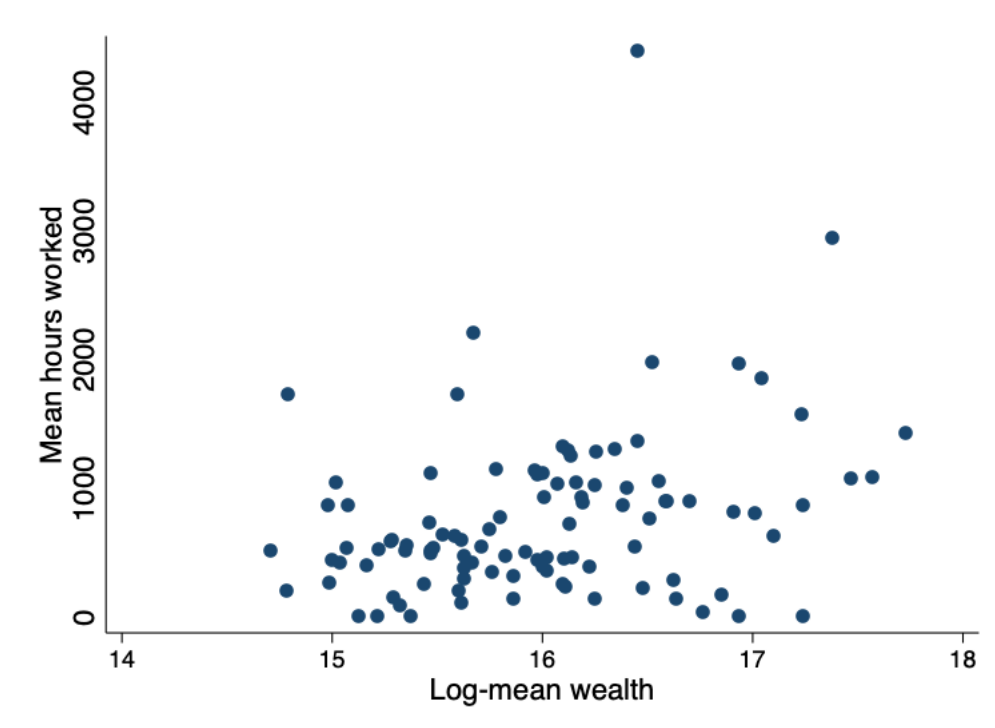


Figure 27: Level of wealth and labor supply by zone



3.2 Plot the inequality of CIW and labor supply by zone (or district) against the level of household income by zone.

Figure 28: Inequality of consumption and labor supply by zone

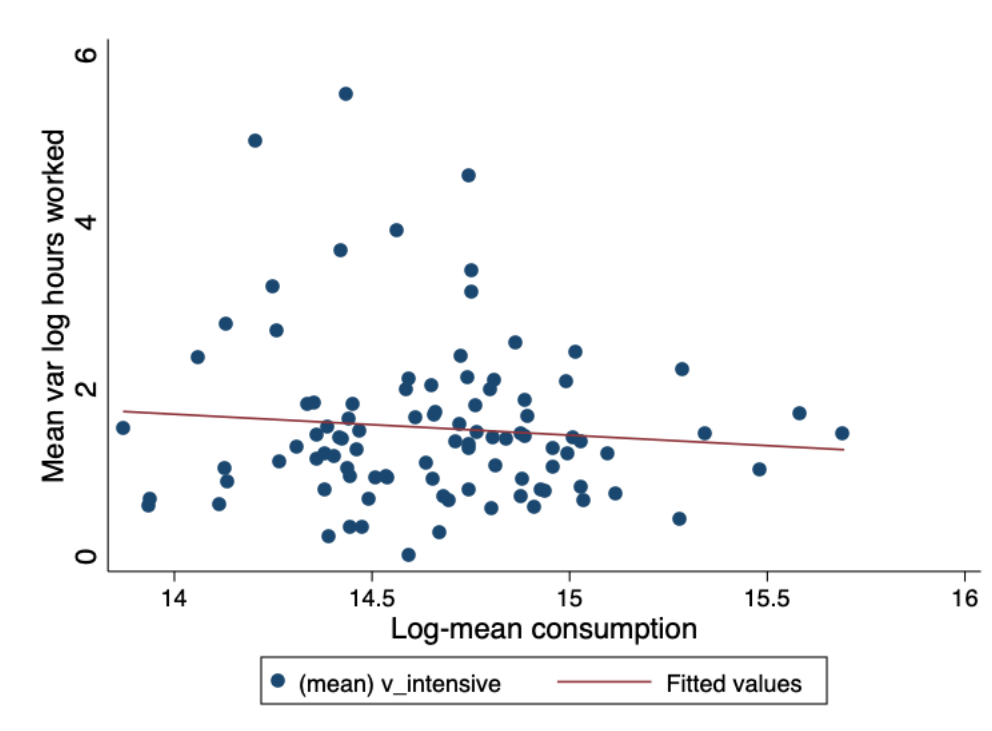


Figure 29: Inequality of income and labor supply by zone

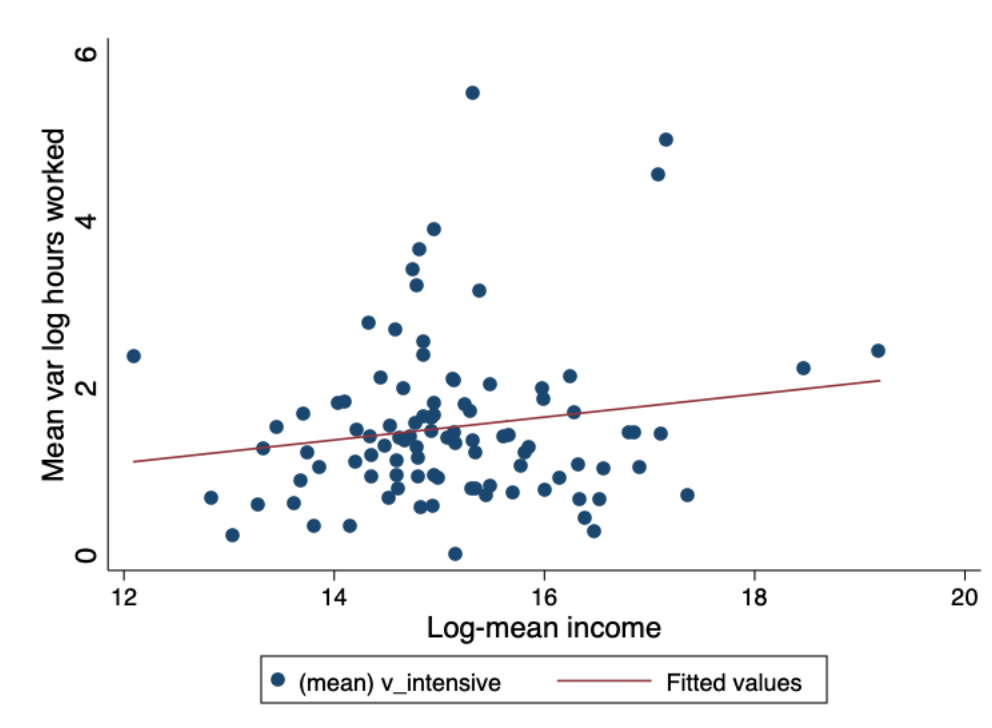
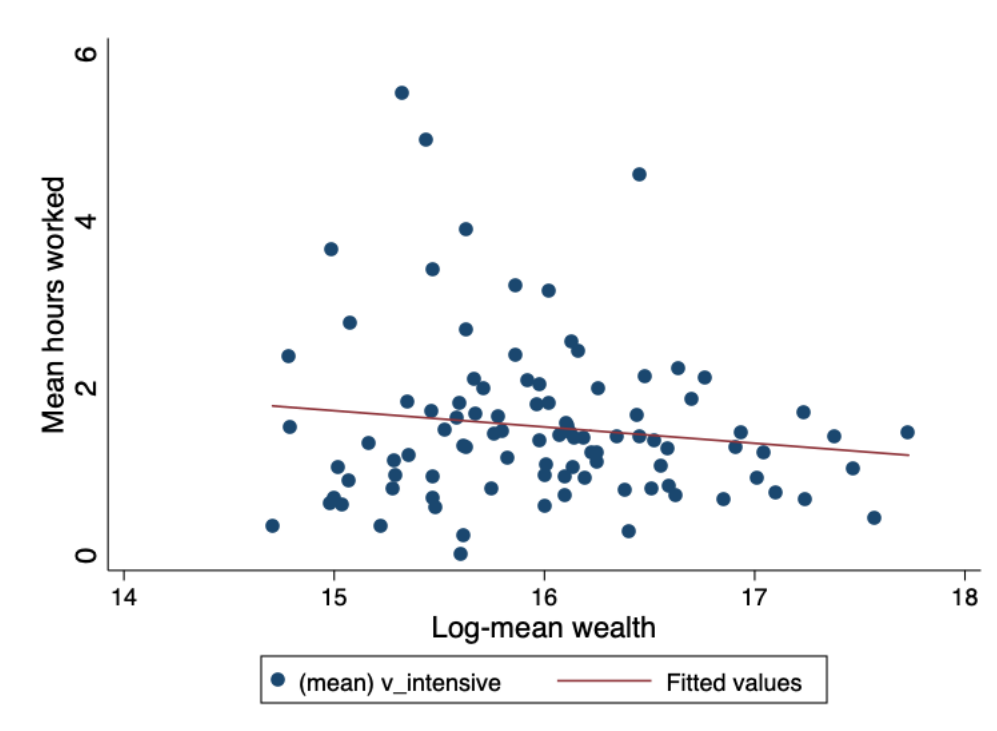


Figure 30: Inequality of wealth and labor supply by zone



3.3 Plot the covariances of CIW and labor supply by zone (or district) against the level of household income by zone.

Figure 31: Covariance of consumption and labor supply by zone

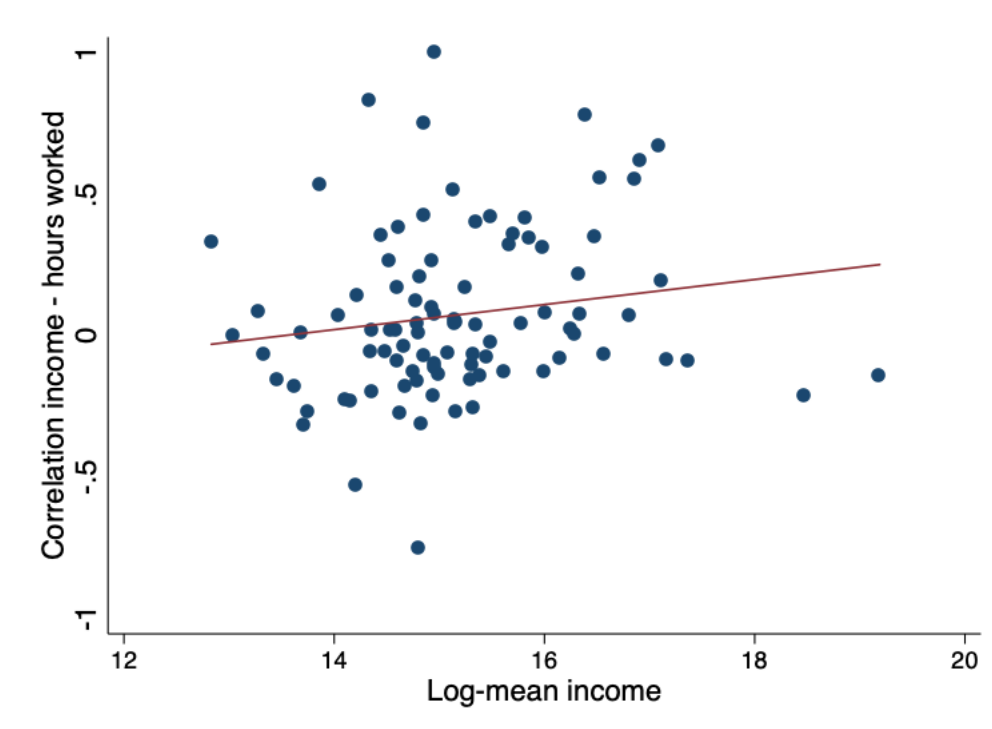


Figure 32: Covariance of income and labor supply by zone

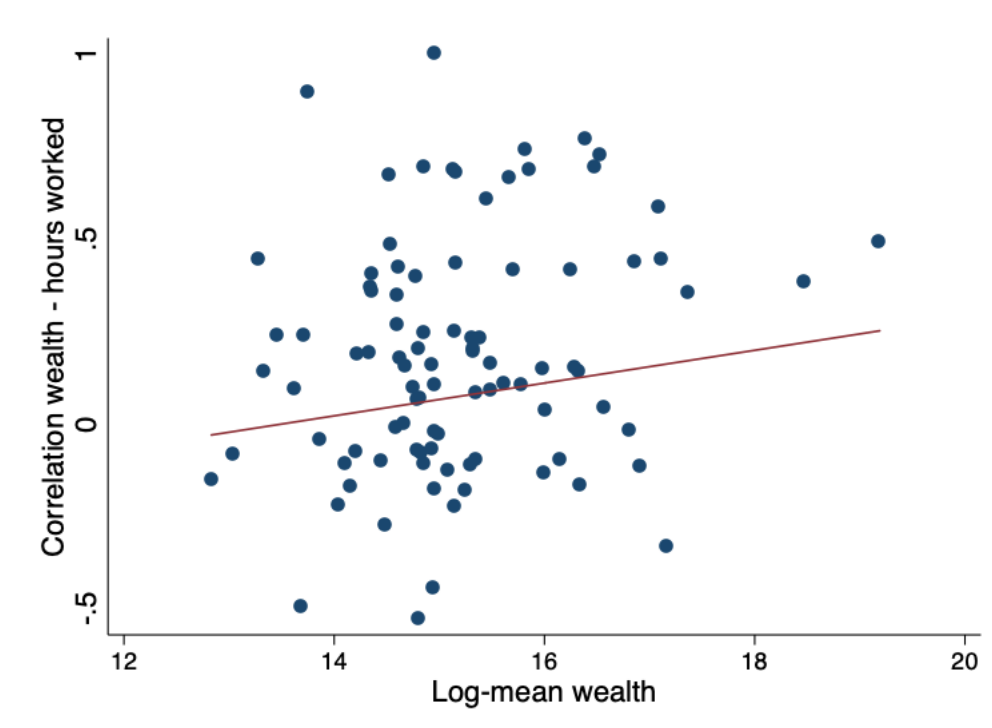


Figure 33: Covariance of wealth and labor supply by zone

