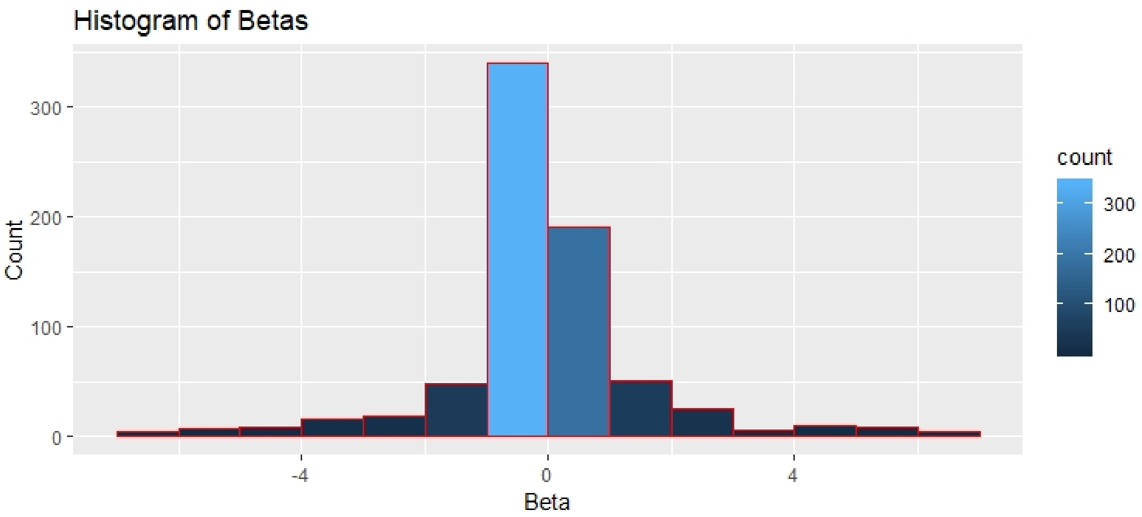
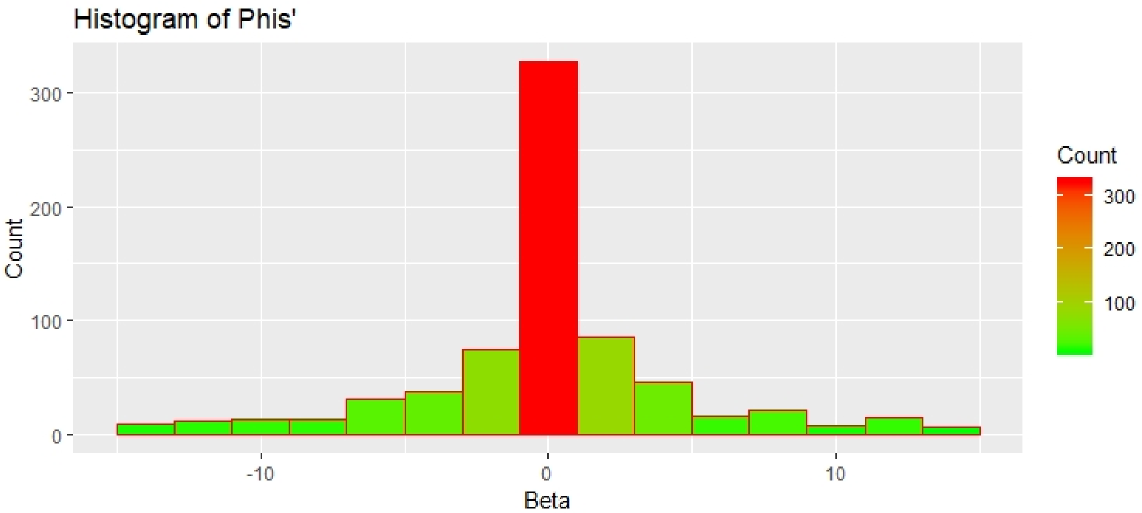
Growth and Development: Problem set 3

1 Question One

We use the dataUGA from Albert's data which contains the Uganda ISA LSM dataset for Uganda for all waves.



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                            OLS Regression Results
==============================================================================
Dep. Variable:                    d_c   R-squared:                       0.041
Model:                            OLS   Adj. R-squared:                  0.041
Method:                 Least Squares   F-statistic:                     136.6
Date:                Mon, 04 Mar 2019   Prob (F-statistic):           8.46e-59
Time:                        13:10:13   Log-Likelihood:                -10349.
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No. Observations:                6355   AIC:                         2.070e+04
Df Residuals:                    6352   BIC:                         2.072e+04
Df Model:                           2
Covariance Type:            nonrobust
==============================================================================
                 coef    std err          t      P>|t|      [0.025      0.975]
------------------------------------------------------------------------------
Intercept     -0.0077      0.017     -0.448      0.655      -0.041       0.026
dy             0.1987      0.012     16.459      0.000       0.175       0.222
dc_bar         0.0187      0.068      0.276      0.782      -0.114       0.151
==============================================================================
Omnibus:                     4860.374   Durbin-Watson:                   1.980
Prob(Omnibus):                  0.000   Jarque-Bera (JB):          1585812.534
Skew:                          -2.600   Prob(JB):                         0.00
Kurtosis:                      80.213   Cond. No.                         5.68
==============================================================================

Warnings:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.
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Comment

From the plot of the β and ϕ, we see that the distribution of income (β) is clustered around 0, this implies the market is not fully complete.
For the test of risk sharing efficiency: regress individual consumption on aggregate income (or aggregate consumption and individual income; if risk sharing is efficient, individual income should be non-significant). Efficient risk sharing implies that individual consumption varies only with aggregate consumption.Time-invariant household effects can be controlled for by first differencing the data, yielding a regression model of the form:

$$\Delta lnc_{i,t} = \beta_i \Delta lny_{i,t} + \phi ln\bar{C}_t + \epsilon_{i,t}$$

where

$$\Delta lnc_{i,t} = -0.0077 + 0.1987\Delta lny_{i,t} + 0.0187ln\bar{C}_t \quad (1)$$

where efficient risk sharing implies $\beta = 0$ and $\phi = 1$ where coefficient β captures the extent to which the household manages to smooth consumption in the face of income shocks. Coefficient ϕ measures the extent of risk pooling within the group.

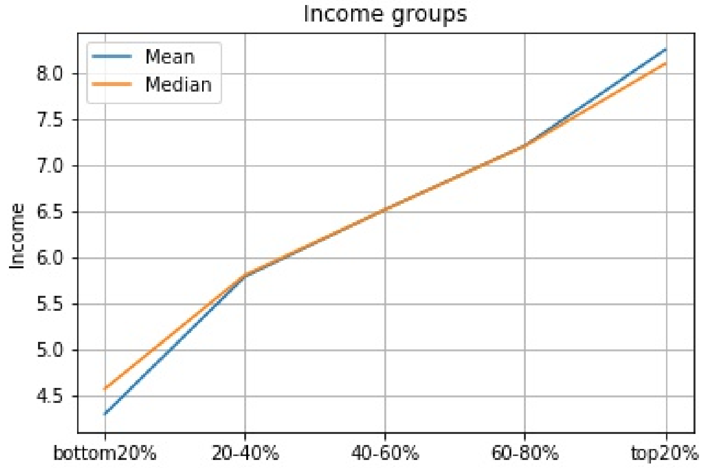
However, this is not the case in 3 as $\beta \neq 0$ and $\phi \neq 1$ even the individual income should be significant, so we say **full risk-sharing is not achieved.**

Interestingly, the median β and ϕ is 0.

	β	ϕ
Mean	2.88	-16.42
Median	0	0

2 Question Two

2 A



	Log average income
2009-2010	15.38
2010-2011	14.88
2011-2012	15.29
2013-2014	14.29

Table 1: Average income across all waves

	Mean	Median
Bottom 20%	-0.25	0
$20-40\%$	0.24	0.2
$40-60\%$	0	0
$60-80\%$	5.07	3.56
Top 20%	-0.60	0

Table 2: Statistics of β for all groups

Comment: To begin with from table 1, we see that the average income acorrs all waves fluctuates about the same value and we can say the average income of Ugandans has been stagnant over the past 8 years. It is evident from table 2 above that the bottom 20% all the way to the middle class $40-60\%$ are more insured as their β are close to 0. Interestingly, the top $60-80\%$ who we may refer to as the 'upper middle class' are the least insured while the top 20% are more insured. We needless say the rich people are more insured as they have to protect their wealth against shocks while poor people are also more insured as they rely on each other in case of emergencies.

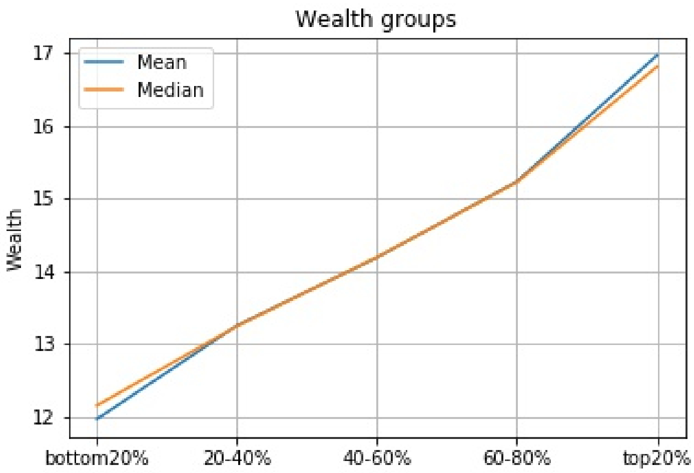
2 B

The downside to this problem is that we don't have the dataset that contains the wealth or landsize across all waves, hence we resort to using the dataset from problem set 1 as it contains wealth but not for only one wave (2013-2014). Unfortunately, we can't calculate the follwowing regression:

$$\Delta lnc_{i,t} = \beta_i \Delta lny_{i,t} + \phi ln\bar{C}_t + \epsilon_{i,t}$$

where $y_{i,t}$ represents household wealth, and Δ the denotes the change between period t and $t+1$ since we have only one period in this case, we can't do this. We decided to fit:

$$lnc_i = \beta_i lny_i + \epsilon_{i,t}$$



OLS Regression Results

Dep. Variable:	logc	R-squared:	0.338
Model:	OLS	Adj. R-squared:	0.338
Method:	Least Squares	F-statistic:	1589.
Date:	Tue, 05 Mar 2019	Prob (F-statistic):	3.81e-281
Time:	12:40:58	Log-Likelihood:	-2507.9
No. Observations:	3114	AIC:	5020.
Df Residuals:	3112	BIC:	5032.
Df Model:	1		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
Intercept	12.1166	0.078	156.039	0.000	11.964	12.269
logw	0.2144	0.005	39.867	0.000	0.204	0.225

Omnibus:	4.694	Durbin-Watson:	1.567
Prob(Omnibus):	0.096	Jarque-Bera (JB):	5.059
Skew:	0.042	Prob(JB):	0.0797
Kurtosis:	3.179	Cond. No.	116.

Warnings:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.

We see that β is 0.005 which is almost zero.

3 Question Three

4 Question Four

Rural Households

OLS Regression Results

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==============================================================================
Dep. Variable:                    d_c   R-squared:                       0.049
Model:                            OLS   Adj. R-squared:                  0.049
Method:                 Least Squares   F-statistic:                     128.1
Date:                Tue, 05 Mar 2019   Prob (F-statistic):           5.79e-55
Time:                        15:07:11   Log-Likelihood:                -8347.8
No. Observations:                4939   AIC:                         1.670e+04
Df Residuals:                    4936   BIC:                         1.672e+04
Df Model:                           2
Covariance Type:            nonrobust
==============================================================================
                 coef    std err          t      P>|t|      [0.025      0.975]
------------------------------------------------------------------------------
Intercept     -0.0167      0.020     -0.817      0.414      -0.057       0.023
d_y            0.2233      0.014     15.926      0.000       0.196       0.251
dc_bar        -0.0057      0.083     -0.069      0.945      -0.168       0.156
==============================================================================
Omnibus:                     3861.426   Durbin-Watson:                   1.992
Prob(Omnibus):                  0.000   Jarque-Bera (JB):          1101174.795
Skew:                          -2.732   Prob(JB):                         0.00
Kurtosis:                      75.946   Cond. No.                         5.97
==============================================================================

Warnings:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.
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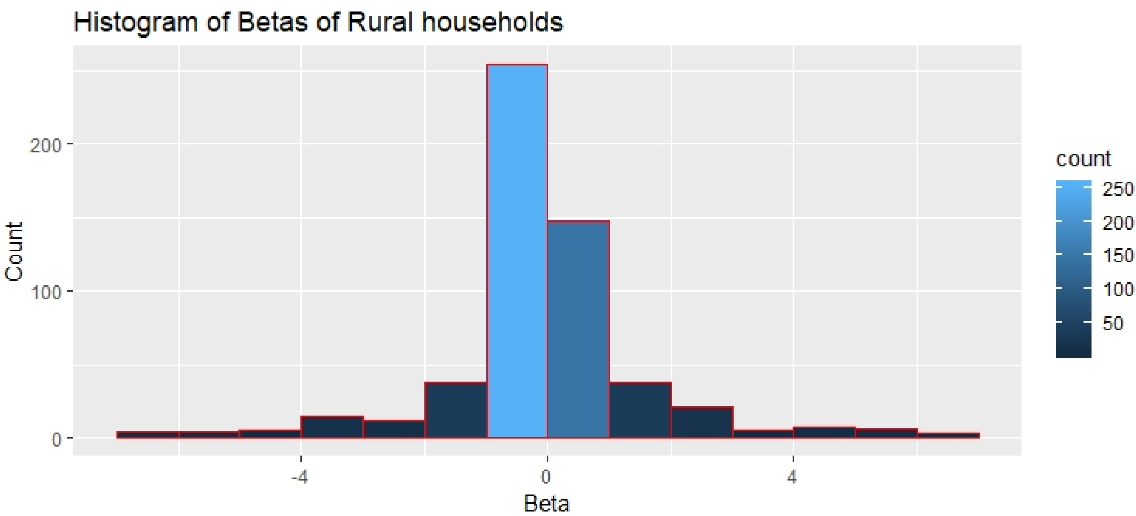
We fit a regression of the form:

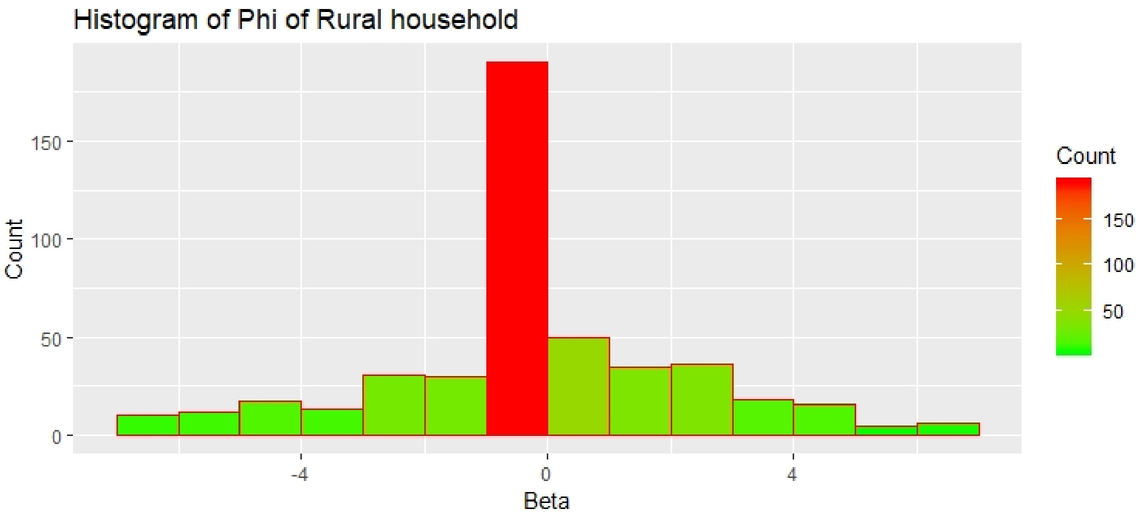
$$\Delta lnc_{i,t} = \beta_i \Delta lny_{i,t} + \phi ln\bar{C}_t + \epsilon_{i,t}$$

where

$$\Delta lnc_{i,t} = -0.0167 + 0.223\Delta lny_{i,t} - 0.0057 ln\bar{C}_t \tag{2}$$

No risk sharing as the $\beta \neq 0$ and $\phi \neq 1$





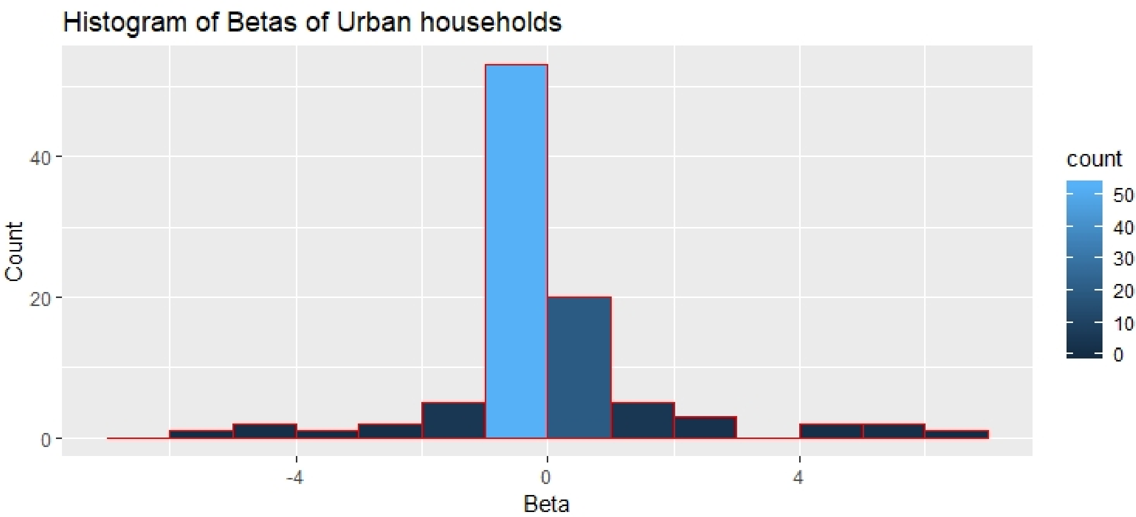
	β	ϕ
Mean	4.04	-20.83
Median	0	0

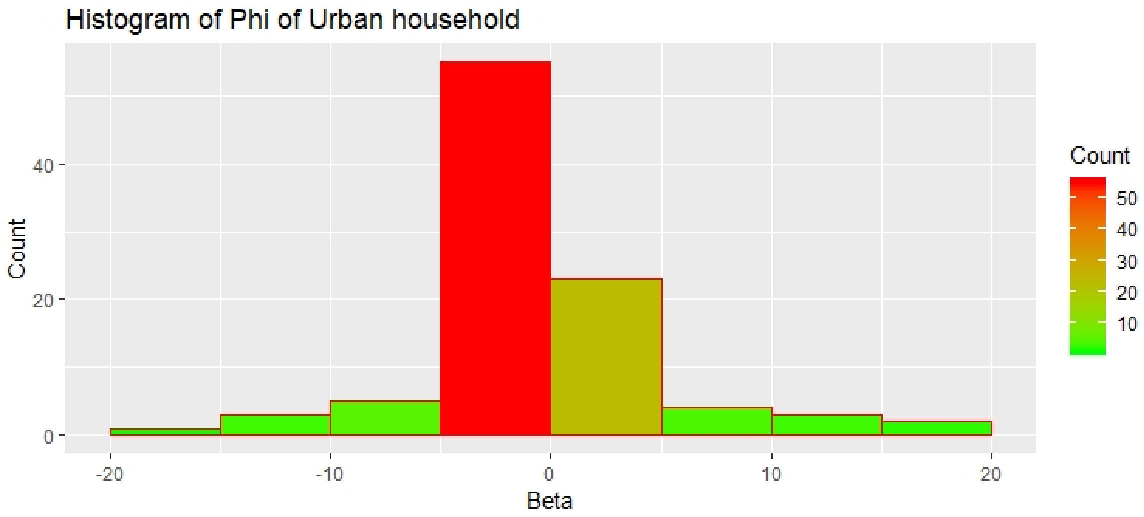
Table 3: Rural households

Urban Households

$$\Delta lnc_{i,t} = -0.0177 + 0.0634\Delta lny_{i,t} + 0.0563ln\bar{C}_t \tag{3}$$

No risk sharing as the $\beta \neq 0$ and $\phi \neq 1$





	β	ϕ
Mean	0.42	1.36
Median	0	0

Table 4: Urban households

We see from table 4 above that the average *beta* is close to 0 and ϕ is close to 1, which infers that urban households are more insured and partially share risk compared to rural households.