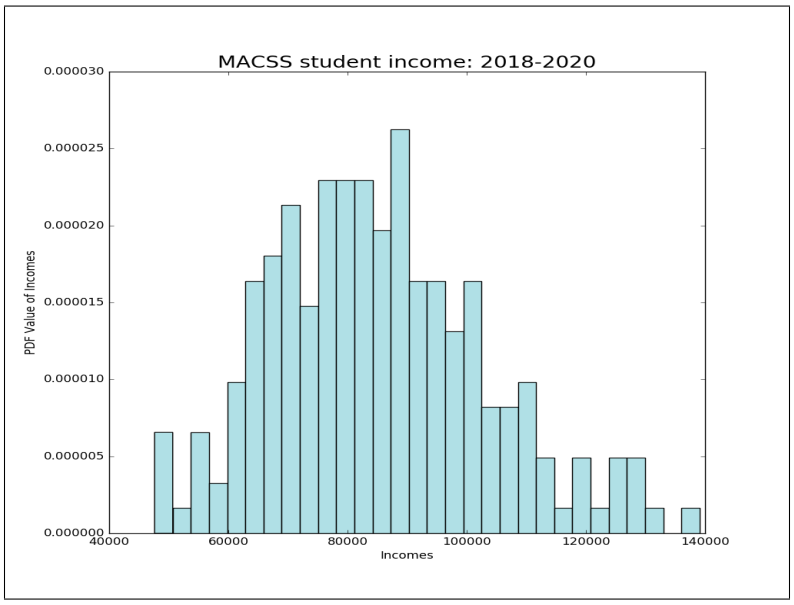
Problem Set #4

MACS 30100, Dr. Evans
Ningyin Xu

Problem 1. Some income data, lognormal distribution, and MM.
Part (a).

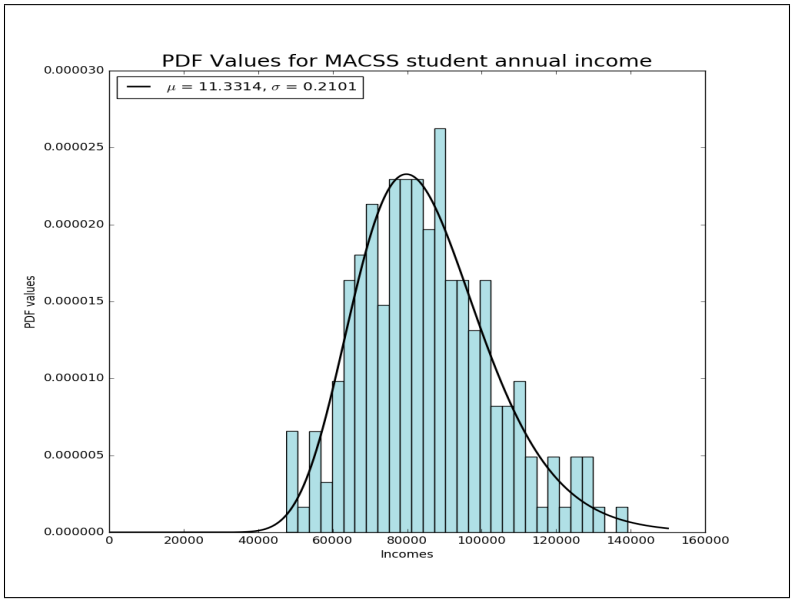


Part (b).

The array returned from my LNpdf() functions is shown as below. It has the same size as the xvals, so the LNpdf() function is constructed successfully.

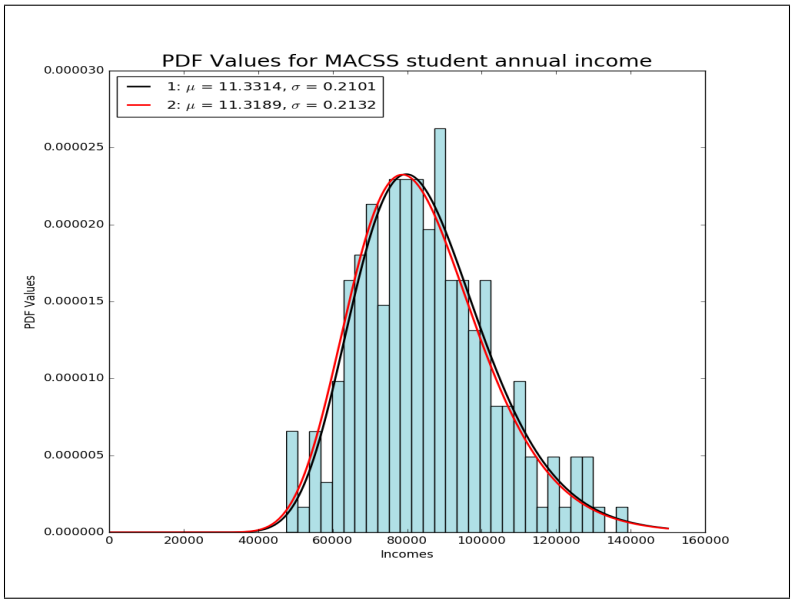
$$\begin{bmatrix} 0.0019079 & 0.00123533 \\ 0.00217547 & 0.0019646 \end{bmatrix}$$

Part (c).



The value of SMM criterion function at the estimated parameter values is: $9.826886786295898e-14$.
And the data moments are: $\mu = 85276.8236$, $\sigma = 17992.5421$.
Model moments at the estimated parameter values are: $\mu = 85276.8173$, $\sigma = 17992.5366$.
These model moments are very close to data moments, which means SMM estimation performs well.

Part (d).



The value of GMM criterion function at the estimated parameter values is:

0.04829947380858357.
And the data moments are: $\mu = 85276.8236$, $\sigma = 17992.5421$.
Model moments at the estimated parameter values are: $\mu = 84273.1688$, $\sigma = 18043.5879$.
These model moments are also very close to data moments, which means 2-step SMM estimation performs well.