Problem Set #2

Perspectives on Computational Modeling
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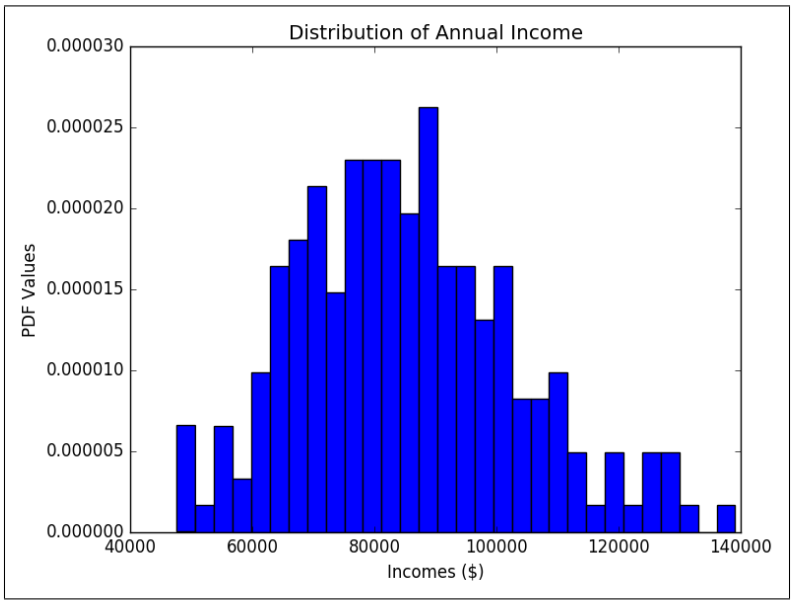
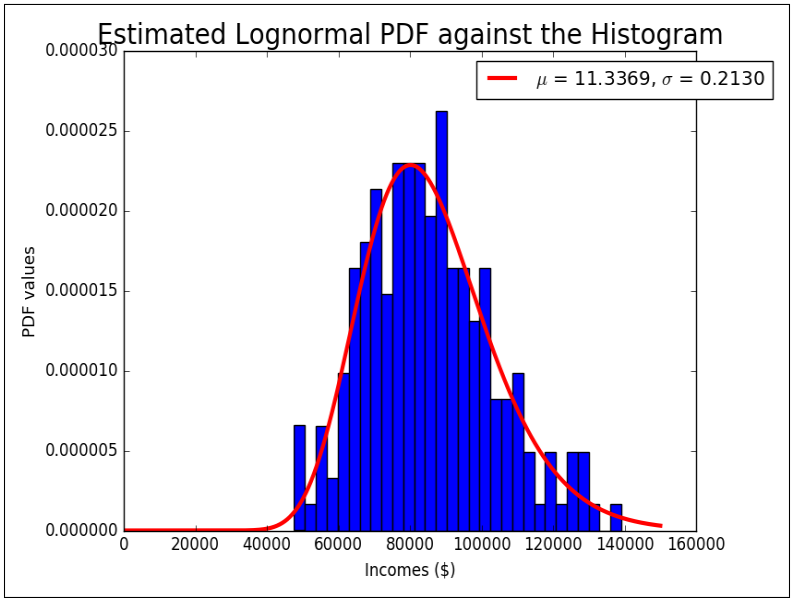
Problem 1.

Part (a). Histogram

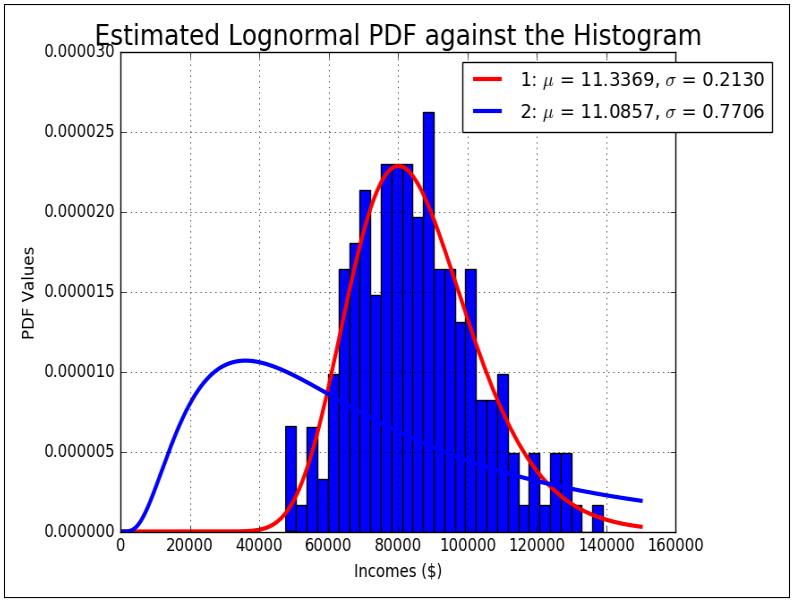


Part (b). One step GMM



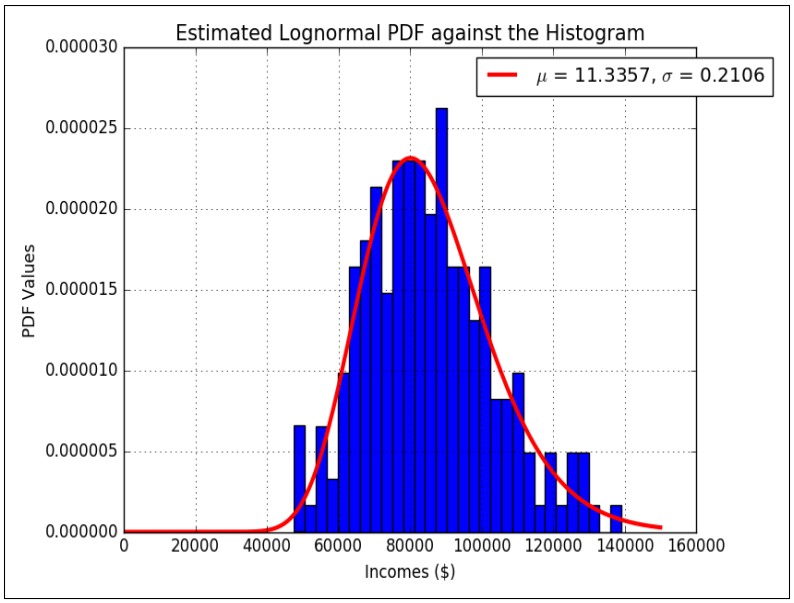
GMM lognormal parameters: mu = 11.3369, sig = 0.2130
Data moment: mu = 85276.8236, std = 17992.5421
Model moment: mu = 85276.7904, std = 17992.5391
Value of GMM criterion: 1.794297513712258e-13

Part (c). Two step GMM



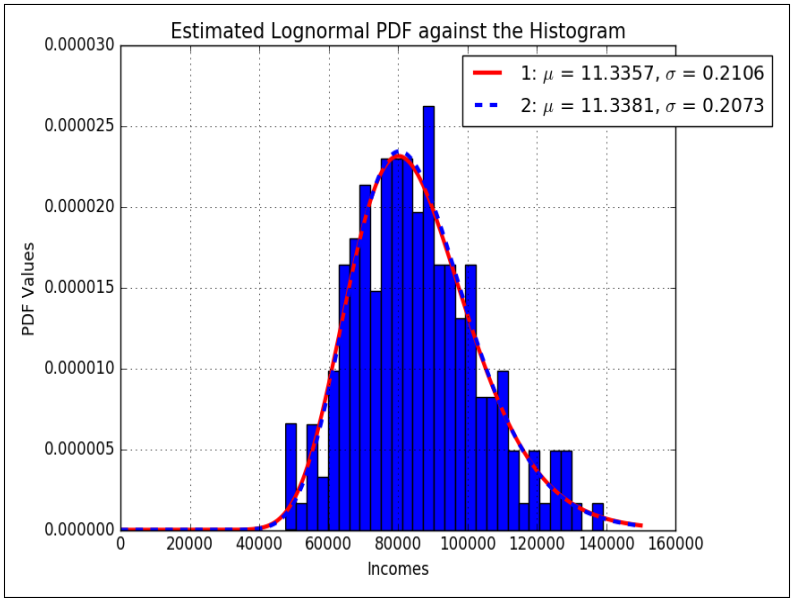
GMM lognormal parameters: mu = 11.0857, sig = 0.7706
Model moment: mu = 85276.8236, std = 17992.5421
Value of GMM criterion: 0.009984728414565325

Part (d). One step GMM



Data moment:
The proportion of income less than $75,000 = 0.3$
$The proportion of income between$75,000 and $100,000 = 0.5$
$The proportion of income more than$100,000 $= 0.2$
Model Moment:
The proportion of income less than $75,000 = 0.3000$
$The proportion of income between$75,000 and $100,000 = 0.5000$
$The proportion of income more than$100,000 $= 0.2000$
Value of GMM criterion: 2.534788361602213e-11

Part (e). Two step GMM



Model Moment:
The proportion of income less than $75,000 = 0.2931$
$The proportion of income between$75,000 and $100,000 = 0.5073$
$The proportion of income more than$100,000 $= 0.1996$
Value of GMM criterion: 91.95874552987516

Part (f). Estimation comparison
The PDF generated from 2-step GMM with 3 data moments(Part.(e)) best fits

the actual data and the model moments from 2-step GMM with mean and std (Part.(c)) least fits the data. Other five figures also fits the data well.

Problem 2.

Part (a). Linear regression
$\beta_0 = 0{:}252$

$\beta_1 = 0.013$
$\beta_2 = 0.401$
β_3 = -0.010
Value of GMM criterion: 0.001821