

```

1  clear all
2  set more off
3  cd "D:\My Drive\Sciences Po\Fall2025\Econometrics III\PS"
4  * Parameters
5  local n = 1000
6  local reps = 100
7
8  * Store results
9  matrix results = J(`reps', 2, .)
10
11 forvalues r = 1/`reps' {
12     clear
13     set obs `n'
14
15     * Generate uniform(0,1)
16     gen y = runiform()
17
18     * MM estimator: 2 * mean(y)
19     quietly summarize y
20     local thetaMM = 2 * r(mean)
21
22     * ML estimator: max(y)
23     summarize y, meanonly
24     local thetaML = r(max)
25
26     * Save into matrix
27     matrix results[`r',1] = `thetaMM'
28     matrix results[`r',2] = `thetaML'
29 }
30
31 * Put results into dataset
32 clear
33 svmat results
34
35 * Rename variables
36 rename results1 thetaMM
37 rename results2 thetaML
38
39 * Summary statistics
40 summarize thetaMM thetaML
41 clear all
42 set more off
43
44 * Parameters
45 local n = 1000
46 local reps = 1000
47
48 * Store results
49 matrix results = J(`reps', 2, .)
50
51 forvalues r = 1/`reps' {
52     clear
53     set obs `n'
54
55     * Generate uniform(0,1)
56     gen y = runiform()
57
58     * MM estimator: 2 * mean(y)
59     quietly summarize y
60     local thetaMM = 2 * r(mean)
61
62     * ML estimator: max(y)
63     summarize y, meanonly

```

```
64     local thetaML = r(max)
65
66     * Save into matrix
67     matrix results[`r',1] = `thetaMM'
68     matrix results[`r',2] = `thetaML'
69 }
70
71 * Put results into dataset
72 clear
73 svmat results
74
75 * Rename variables
76 rename results1 thetaMM
77 rename results2 thetaML
78
79 * Summary statistics
80 summarize thetaMM thetaML
81 * Histogram of MM estimator
82 histogram thetaMM, width(0.01) start(0.9) xline(1, lcolor(red)) ///
83     title("Distribution of  $\hat{\theta}_{MM}$  over 1000 replications") xtitle(" $\hat{\theta}_{MM}$ ") ytitle("Frequency")
84 graph export "thetaMM_hist.png",replace
85 * Histogram of ML estimator
86 histogram thetaML, width(0.001) start(0.99) xline(1, lcolor(red)) ///
87     title("Distribution of  $\hat{\theta}_{ML}$  over 1000 replications") xtitle(" $\hat{\theta}_{ML}$ ") ytitle("Frequency")
88 graph export "thetaML_hist.png",replace
```