

# Homework 2

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September 24, 2018

## 1 Part 1

```
. program genest
1. drop _all
2. set obs 50
3. gen eps = rnormal()
4. gen x = 3 + 2*rnormal()
5. gen y = -2 + 1.5*x + eps
6. regress y x
7. end
```

## 2 Part 2

Below is the output

```
. genest
number of observations (_N) was 0, now 50
```

Source	SS	df	MS	Number of obs	=
50					
Model	324.356864	1	324.356864	F(1, 48)	= 294.26
Residual	52.9089918	48	1.10227066	Prob > F	= 0.0000
				R-squared	= 0.8598
				Adj R-squared	= 0.8568
Total	377.265856	49	7.69930318	Root MSE	= 1.0499

y	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
x	1.45453	.0847921	17.15	0.000	1.284044 1.625016
_cons	-1.964622	.2648232	-7.42	0.000	-2.497084 -1.432159

## 3 Part 3

```
. set seed 1

. simulate est = _b[x] se = _se[x], reps(200): genest
```







(c) They are roughly the same.

## 10 Part 10

```
. program genestivboot
  1. drop _all
  2. set obs 50
  3. matrix C = (1, .1 \ .1, 1)
  4. drawnorm eps1 eps2, n(50) corr(C)
  5. gen z = rnormal(0,sqrt(3))
  6. gen x = 3 + z + eps1
  7. gen y = -2 + 1.5*x + eps2
  8. ivregress 2sls y (x = z), vce(bootstrap)
  9. end
```

## 11 Part 11

```
. genestivboot
number of observations (_N) was 0, now 50
(running ivregress on estimation sample)
```

Bootstrap replications (50)

```
-----+----- 1 -----+----- 2 -----+----- 3 -----+----- 4 -----+----- 5
..... 50
```

Instrumental variables (2SLS) regression  
50

```
Number of obs   =
Wald chi2(1)    =    236.68
Prob > chi2     =    0.0000
R-squared       =    0.8961
Root MSE       =    .90743
```

	Observed Coef.	Bootstrap Std. Err.	z	P> z	Normal-based [95% Conf. Interval]	
y						
x	1.362522	.0885646	15.38	0.000	1.188938	1.536105
_cons	-1.892268	.2429807	-7.79	0.000	-2.368501	-1.416034

```
Instrumented:  x
Instruments:   z
```

## 12 Part 12

```
. set seed 1

. simulate estivboot = _b[x] seivboot = _se[x], reps(200): genestivboot

command: genestivboot
```

