

```

-----
name: <unnamed>
log: /Users/mien/Desktop/ee426/assignment15.log
log type: text
opened on: 13 May 2021, 08:32:53

```

```

1
. varsoc rspot rfuture, maxlag(5)

```

```

Selection-order criteria
Sample: 7 - 795
Number of obs = 789

```

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	4774.48				1.9e-08	-12.0975	-12.093	-12.0857
1	4837.65	126.33	4	0.000	1.6e-08	-12.2475	-12.2339	-12.212
2	4857.92	40.555	4	0.000	1.6e-08	-12.2888	-12.266	-12.2296
3	4882.17	48.486*	4	0.000	1.5e-08*	-12.3401*	-12.3082*	-12.2572*
4	4884.45	4.5566	4	0.336	1.5e-08	-12.3357	-12.2948	-12.2292
5	4886.05	3.2155	4	0.522	1.5e-08	-12.3297	-12.2796	-12.1994

```

Endogenous: rspot rfuture
Exogenous: _cons
Optimal lag terms is 3

```

```

. varstable, graph
could not restore estimates(.)
r(301);

```

```

. var rspot rfuture, lag(3,3)
lags() invalid -- invalid numlist has elements out of order
r(124);

```

```

. var rspot rfuture, lag(3/3)

```

Vector autoregression

```

Sample: 5 - 795
Log likelihood = 4792.689
FPE = 1.90e-08
Det(Sigma_ml) = 1.87e-08
Number of obs = 791
AIC = -12.10288
HQIC = -12.08925
SBIC = -12.06743

```

Equation	Parms	RMSE	R-sq	chi2	P>chi2
rspot	3	.01866	0.0036	2.8357	0.2422
rfuture	3	.022016	0.0004	.2922264	0.8641

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
rspot					
rspot L3.	-.1337006	.1055832	-1.27	0.205	-.3406399 .0732388
rfuture L3.	.1403907	.089659	1.57	0.117	-.0353377 .3161192
_cons	-.0000461	.0006622	-0.07	0.944	-.001344 .0012518
rfuture					
rspot L3.	-.0630787	.1245721	-0.51	0.613	-.3072355 .1810782
rfuture L3.	.0571784	.105784	0.54	0.589	-.1501543 .2645112
_cons	5.44e-06	.0007813	0.01	0.994	-.0015259 .0015368

2.

. varstable, graph

Eigenvalue stability condition

Eigenvalue	Modulus
.1891842 + .3276766i	.378368
.1891842 - .3276766i	.378368
-.3783683	.378368
.1408493 + .2439581i	.281699
.1408493 - .2439581i	.281699
-.2816986	.281699

All the eigenvalues lie inside the unit circle.
VAR satisfies stability condition.

. graph save Graph "/Users/mien/Desktop/ee426/15_02-1.gph"
(file /Users/mien/Desktop/ee426/15_02-1.gph saved)

. vargranger

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
rspot	rfuture	2.4518	1	0.117
rspot	ALL	2.4518	1	0.117
rfuture	rspot	.2564	1	0.613
rfuture	ALL	.2564	1	0.613

3.

. irf create order3, order(rspot rfuture) step(5) set(irf03)
(file irf03.irf now active)
(file irf03.irf updated)

. irf table irf, impulse(rspot rfuture) response(rspot rfuture)

Results from order3

step	(1) irf	(1) Lower	(1) Upper	(2) irf	(2) Lower	(2) Upper
0	1	1	1	0	0	0
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	-.133701	-.34064	.073239	-.063079	-.307236	.181078
4	0	0	0	0	0	0
5	0	0	0	0	0	0

step	(3) irf	(3) Lower	(3) Upper	(4) irf	(4) Lower	(4) Upper
0	0	0	0	1	1	1
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	.140391	-.035338	.316119	.057178	-.150154	.264511
4	0	0	0	0	0	0
5	0	0	0	0	0	0

95% lower and upper bounds reported

(1) irfname = order3, impulse = rspot, and response = rspot

(2) irfname = order3, impulse = rspot, and response = rfuture

(3) irfname = order3, impulse = rfuture, and response = rspot
 (4) irfname = order3, impulse = rfuture, and response = rfuture

```
. irf graph irf, impulse(rspot rfuture) response(rspot rfuture)
. graph use "/Users/mien/Desktop/ee426/15_02-1.gph"
. irf table oirf, impulse(rspot rfuture) response(rspot rfuture)
```

Results from order3

step	(1) oirf	(1) Lower	(1) Upper	(2) oirf	(2) Lower	(2) Upper
0	.018624	.017707	.019542	.02071	.019568	.021851
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	.000417	-.000881	.001716	9.3e-06	-.00152	.001539
4	0	0	0	0	0	0
5	0	0	0	0	0	0

step	(3) oirf	(3) Lower	(3) Upper	(4) oirf	(4) Lower	(4) Upper
0	0	0	0	.007346	.006984	.007708
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	.001031	-.000261	.002323	.00042	-.001103	.001943
4	0	0	0	0	0	0
5	0	0	0	0	0	0

95% lower and upper bounds reported

(1) irfname = order3, impulse = rspot, and response = rspot
 (2) irfname = order3, impulse = rspot, and response = rfuture
 (3) irfname = order3, impulse = rfuture, and response = rspot
 (4) irfname = order3, impulse = rfuture, and response = rfuture

```
. oirf graph oirf, impulse(rspot rfuture) response(rspot rfuture)
command oirf is unrecognized
r(199);
```

```
. irf graph oirf, impulse(rspot rfuture) response(rspot rfuture)
. irf graph coirf, impulse(rspot rfuture) response(rspot rfuture)
```

```
. graph save Graph "/Users/mien/Desktop/ee426/coirf.gph"
(file /Users/mien/Desktop/ee426/coirf.gph saved)
```

```
. irf graph oirf, impulse(rspot rfuture) response(rspot rfuture)
```

```
. graph save Graph "/Users/mien/Desktop/ee426/oirf.gph"
(file /Users/mien/Desktop/ee426/oirf.gph saved)
```

```
. graph use "/Users/mien/Desktop/ee426/coirf.gph"
```

According to COIRF, the impact of rspot on rfuture is the highest in a positive manner (the graph marks around 0.2)

```
4.
. irf table fevd, impulse(rspot rfuture) response(rspot)
```

Results from order3

	(1)	(1)	(1)	(2)	(2)	(2)
--	-----	-----	-----	-----	-----	-----

step	fevd	Lower	Upper	fevd	Lower	Upper
0	0	0	0	0	0	0
1	1	1	1	0	0	0
2	1	1	1	0	0	0
3	1	1	1	0	0	0
4	.996945	.989307	1.00458	.003055	-.004582	.010693
5	.996945	.989307	1.00458	.003055	-.004582	.010693

95% lower and upper bounds reported

(1) irfname = order3, impulse = rspot, and response = rspot

(2) irfname = order3, impulse = rfuture, and response = rspot

```
. irf table fevd, impulse(rspot rfuture) response(rfuture)
```

Results from order3

step	(1) fevd	(1) Lower	(1) Upper	(2) fevd	(2) Lower	(2) Upper
0	0	0	0	0	0	0
1	.888241	.873561	.902921	.111759	.097079	.126439
2	.888241	.873561	.902921	.111759	.097079	.126439
3	.888241	.873561	.902921	.111759	.097079	.126439
4	.887917	.873012	.902821	.112083	.097179	.126988
5	.887917	.873012	.902821	.112083	.097179	.126988

95% lower and upper bounds reported

(1) irfname = order3, impulse = rspot, and response = rfuture

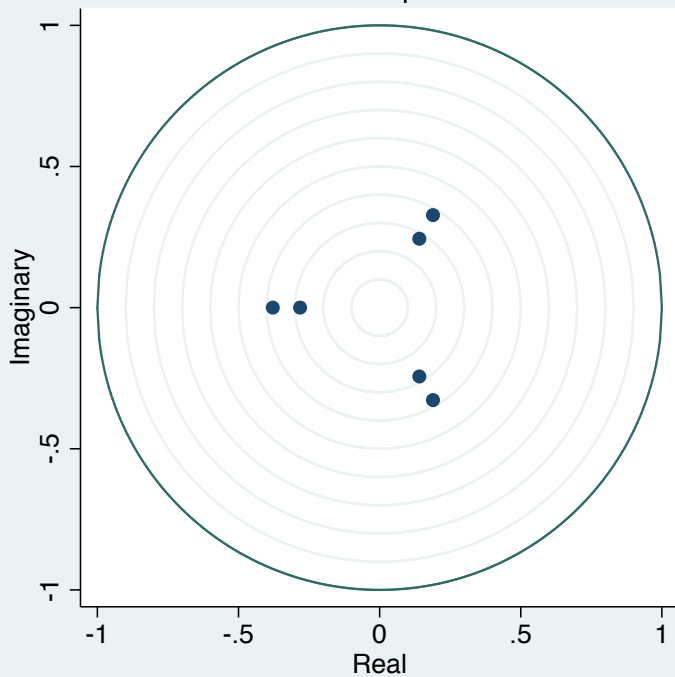
(2) irfname = order3, impulse = rfuture, and response = rfuture

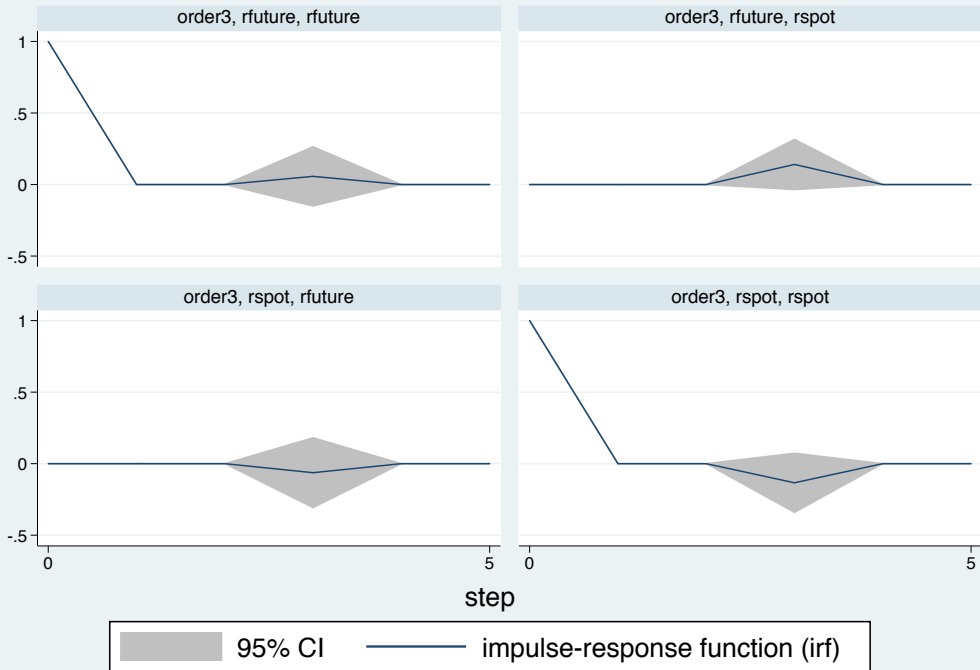
The impact of rspot on rspot and rspot on rfuture are quite high

5. Changing Cholesky order from – “rspot rfuture” to “rfuture rspot” will change the results of irf, oirf, coirf, and fevd because different orders of Cholesky will set up the different var-cov matrix. This will give us different results.

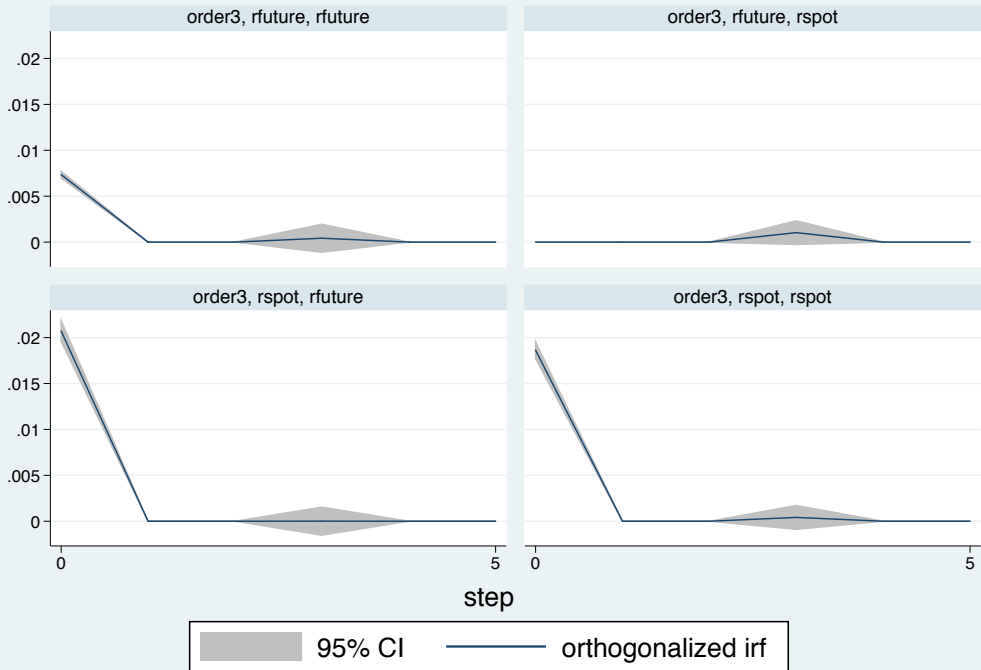
```
.
.
. log close
  name: <unnamed>
  log: /Users/mien/Desktop/ee426/assignment15.log
  log type: text
  closed on: 13 May 2021, 08:59:06
```

Roots of the companion matrix

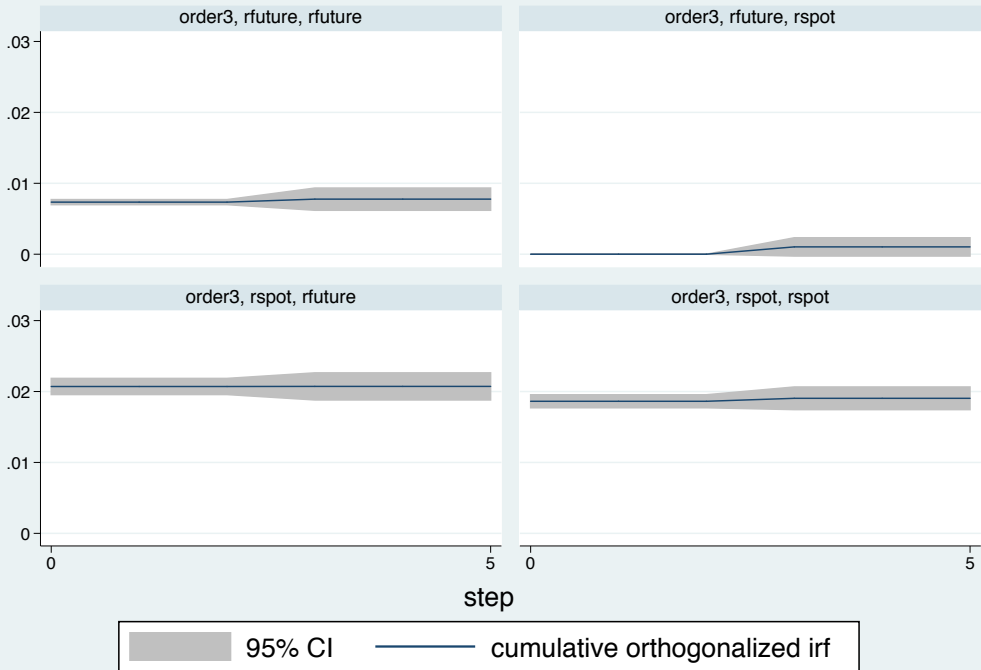




Graphs by irfname, impulse variable, and response variable



Graphs by irfname, impulse variable, and response variable



Graphs by irfname, impulse variable, and response variable