```
1 . varbasic ZincPrice ZincProduction  REA1, lags(1/2) step(8) irf
```

Vector autoregression

Sample: **1970 - 2019** Number of obs = **50**
Log likelihood = **178.3668** AIC = **-6.29467**
FPE = **3.73e-07** HQIC = **-5.988864**
Det(Sigma_ml) = **1.60e-07** SBIC = **-5.491621**

Equation	Parms	RMSE	R-sq	chi2	P>chi2
ZincPrice	**7**	**.095864**	**0.1594**	**9.482004**	**0.1482**
ZincProduction	**7**	**.014927**	**0.0748**	**4.039964**	**0.6713**
REA1	**7**	**.386845**	**0.4646**	**43.38163**	**0.0000**

	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
ZincPrice						
ZincPrice						
L1.	**.0972489**	**.1440814**	**0.67**	**0.500**	**-.1851454**	**.3796433**
L2.	**-.2981991**	**.1382792**	**-2.16**	**0.031**	**-.5692214**	**-.0271769**
ZincProduction						
L1.	**-1.562741**	**.931103**	**-1.68**	**0.093**	**-3.387669**	**.2621877**
L2.	**-.3825191**	**.9554966**	**-0.40**	**0.689**	**-2.255258**	**1.49022**
REA1						
L1.	**.0395836**	**.0373292**	**1.06**	**0.289**	**-.0335803**	**.1127474**
L2.	**-.0053895**	**.0354144**	**-0.15**	**0.879**	**-.0748004**	**.0640214**
_cons	**.0381301**	**.0178394**	**2.14**	**0.033**	**.0031656**	**.0730947**
ZincProduction						
ZincPrice						
L1.	**.0209841**	**.0224349**	**0.94**	**0.350**	**-.0229875**	**.0649557**
L2.	**.000239**	**.0215315**	**0.01**	**0.991**	**-.0419619**	**.0424399**
ZincProduction						
L1.	**-.0535437**	**.1449821**	**-0.37**	**0.712**	**-.3377033**	**.2306159**
L2.	**.0025925**	**.1487804**	**0.02**	**0.986**	**-.2890117**	**.2941967**
REA1						
L1.	**.0068224**	**.0058125**	**1.17**	**0.241**	**-.00457**	**.0182147**
L2.	**-.0011793**	**.0055144**	**-0.21**	**0.831**	**-.0119873**	**.0096287**
_cons	**.0074774**	**.0027778**	**2.69**	**0.007**	**.002033**	**.0129217**
REA1						
ZincPrice						
L1.	**.4170945**	**.5814159**	**0.72**	**0.473**	**-.7224597**	**1.556649**
L2.	**-.7512431**	**.5580022**	**-1.35**	**0.178**	**-1.844907**	**.3424212**
ZincProduction						
L1.	**.297657**	**3.757308**	**0.08**	**0.937**	**-7.066531**	**7.661845**
L2.	**-4.039985**	**3.855744**	**-1.05**	**0.295**	**-11.5971**	**3.517134**
REA1						
L1.	**.7436412**	**.1506355**	**4.94**	**0.000**	**.448401**	**1.038881**
L2.	**-.0920177**	**.1429087**	**-0.64**	**0.520**	**-.3721137**	**.1880782**
_cons	**.0369365**	**.0719877**	**0.51**	**0.608**	**-.1041569**	**.1780299**

```
2 . varstable
```

Eigenvalue stability condition

Eigenvalue	Modulus
.08931262 + .5428354*i*	.550134
.08931262 - .5428354*i*	.550134
.4634904	.46349
-.2280627	.228063
.1866468 + .02782901*i*	.18871
.1866468 - .02782901*i*	.18871

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

```
3 . predict error22, resid
(5 missing values generated)

4 . summarize error22
```

Variable	Obs	Mean	Std. Dev.	Min	Max
error22	50	-4.76e-10	.0898036	-.1800298	.3649224

```
5 . stline error22, yline(-4.76e-10)
command stline is unrecognized
r(199);

6 . tsline error22, yline(-4.76e-10)

7 . varlmar
```

Lagrange-multiplier test

lag	chi2	df	Prob > chi2
1	7.2530	9	0.61079
2	11.0325	9	0.27349

H0: no autocorrelation at lag order

```
8 . vargranger
```

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
ZincPrice	ZincProduction	2.8815	2	0.237
ZincPrice	REA1	1.4225	2	0.491
ZincPrice	ALL	3.2255	4	0.521
ZincProduction	ZincPrice	.88025	2	0.644
ZincProduction	REA1	1.6793	2	0.432
ZincProduction	ALL	4.0292	4	0.402
REA1	ZincPrice	2.2084	2	0.331
REA1	ZincProduction	1.1274	2	0.569
REA1	ALL	3.4625	4	0.484

```
9 . irf table fevd, impulse( ZincPrice ZincProduction REA1 ) response( ZincPrice ZincProduction REA1 ) noc
```

Results from varbasic

step	(1) fevd	(2) fevd	(3) fevd	(4) fevd	(5) fevd	(6) fevd	(7) fevd	(8) fevd
0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
1	**1**	**.008957**	**.064699**	**0**	**.991043**	**.10716**	**0**	**0**
2	**.947178**	**.040667**	**.093061**	**.033314**	**.934912**	**.107048**	**.019508**	**.024421**
3	**.945834**	**.043147**	**.084037**	**.032647**	**.922907**	**.095743**	**.021519**	**.033946**
4	**.944712**	**.044545**	**.085348**	**.033748**	**.918338**	**.092943**	**.02154**	**.037117**
5	**.944377**	**.045198**	**.085496**	**.033961**	**.917354**	**.092492**	**.021662**	**.037448**
6	**.944371**	**.045237**	**.085521**	**.033979**	**.917277**	**.092404**	**.02165**	**.037486**
7	**.944289**	**.045306**	**.085548**	**.034025**	**.91719**	**.092379**	**.021687**	**.037504**
8	**.944298**	**.045306**	**.085549**	**.03402**	**.91718**	**.092375**	**.021683**	**.037514**

step	(9) fevd
0	**0**
1	**.828141**
2	**.799891**
3	**.82022**
4	**.821709**
5	**.822012**
6	**.822075**
7	**.822073**
8	**.822076**

(1) irfname = varbasic, impulse = ZincPrice, and response = ZincPrice
(2) irfname = varbasic, impulse = ZincPrice, and response = ZincProduction
(3) irfname = varbasic, impulse = ZincPrice, and response = REA1
(4) irfname = varbasic, impulse = ZincProduction, and response = ZincPrice
(5) irfname = varbasic, impulse = ZincProduction, and response = ZincProduction
(6) irfname = varbasic, impulse = ZincProduction, and response = REA1
(7) irfname = varbasic, impulse = REA1, and response = ZincPrice
(8) irfname = varbasic, impulse = REA1, and response = ZincProduction
(9) irfname = varbasic, impulse = REA1, and response = REA1

10 .