ECO376 Time Series Analysis

Lab4 Assignment

1. Create a do file to estimate VAR(p) model as SBIC suggested and find the Granger causality for the following periods:

a) 1950-1979

b) 1980-1990

c) 1990-current

d) Entire periods

2. Using the VAR model for different periods, explain the following causality

a) The impacts of government expenditure on gross domestic products

1950-79: Insignificant influence.

1980-90: Insignificant influence.

1990-current: Insignificant influence.

Entire periods: GDP is influenced by Government spending.

b) The impacts of monetary variable on gross domestic products

1950-79: GDP is influenced by M2.

1980-90: GDP is influenced by M2.

1990-current: Insignificant influence.

Entire periods: GDP is influenced by M2.

c) The impacts of gross domestic products on government expenditure

1950-79: Insignificant influence.

1980-90: GDP influences government spending.

1990-current: Insignificant influence.

Entire periods: Government spending is influenced by GDP.

d) The impacts of gross domestic products on monetary policy

1950-79: Insignificant influence.

1980-90: GDP has significant influence on M2.

1990-current: GDP has very significant influence on M2.

Entire periods: M2 is influenced by GDP.

3. Using the entire periods, calculate the impulse response function, and explain what you found.

irf, g, g: How a one unit shock to Government spending effects Government spending.

Government spending increased until about 6 lags where it leveled off.

irf, g, m: How a one unit shock to M2 effects Government spending.

Government spending slightly increased from lags 3 to 6. Not a significant change.

irf, g, y: How a one unit shock to GDP effects Government spending.

Government spending slightly increased from lags 3 to 6. Not a significant change.

irf, m, g: How a one unit shock to Government spending effects M2.

M2 increased after lag 9.

irf, m, m: How a one unit shock to M2 effects M2.

M2 increased significantly until it leveled off after lag 7.

irf, m, y: How a one unit shock to GDP effects M2.

M2 increased slightly between lags 2 and 6. Not a significant change.

irf, y, g: How a one unit shock to Government spending effects GDP.

GDP increased slightly from lag 8 to 14. Not a significant change.

irf, y, m: How a one unit shock to M2 effects GDP.

GDP was unaffected.

irf, y, y: How a one unit shock to GDP effects GDP.

GDP increased significantly until it leveled off after lag 6.

All do file needs to be included at the end of text

```
clear all
set more off
global gopt1 graphregion(color(white)) legend(size(small)) legend(region(lwidth(none)))
global begin_yr 1980
global end_yr 1990

freduse GDP M2SL FGEXPND
gen month = month(daten)
gen year  = year(daten)
*keep if month == 1 | month == 4 | month == 7 | month == 10
keep if year >= $begin_yr & year <= $end_yr
gen yearm =  mofd(daten)
gen yearq =  qofd(daten)
format yearm %tm
format yearq %tq

collapse GDP M2SL FGEXPND year, by(yearq)
tsset yearq
gen y = 100*ln(GDP/L4.GDP)
label var y "GDP"
gen m = 100*ln(M2SL/L4.M2SL)
label var m "M2"
gen g = 100*ln(FGEXPND/L4.FGEXPND)
label var g "G"
```

```
drop if y == . | m == . | g == .

var  y m g  , lag(1/4)
vargranger

clear all
set more off
global gopt1 graphregion(color(white)) legend(size(small)) legend(region(lwidth(none)))
global begin_yr 1950
global end_yr 2017

freduse GDP M2SL FGEXPND
gen month = month(daten)
gen year  = year(daten)
*keep if month == 1 | month == 4 | month == 7 | month == 10
keep if year >= $begin_yr & year <= $end_yr
gen yearm =  mofd(daten)
gen yearq =  qofd(daten)
format yearm %tm
format yearq %tq

collapse GDP M2SL FGEXPND year, by(yearq)
tsset yearq
gen y = 100*ln(GDP/L4.GDP)
label var y "GDP"
gen m = 100*ln(M2SL/L4.M2SL)
label var m "M2"
gen g = 100*ln(FGEXPND/L4.FGEXPND)
```

```
label var g "G"

drop if y == . | m == . | g == .

var  y m g  if year < 1980, lag(1/4)
vargranger

var  y m g  if year > 1989, lag(1/4)
vargranger

var  y m g  , lag(1/4)
vargranger

var  y m g  , lag(1/4)
irf create irf, set(macro) step(15) replace
irf graph irf, yline(0)
```