Purchases

contribution to real GDP growth from total purchases of goods and services =

((change in real purchases) / real purchases[t-1]) * share * 100

Change in real purchases = purchases[t] – purchases[t-1]

Share = 0.5*(nominal purchases[t]/nominal gdp[t] + nominal purchases[t-1]/nominal gdp[t-1])

Grants

contribution to real GDP growth from grants =

(change in real purchase grants + change in real permanent grants + change in real temporary grants+ change in real capital transfer grants) / real gdp[t-1] * 100

changes in purchase grants, permanent grants, and temporary grants use the difference in the 6-quarter moving averages to capture the lagged response

Transfers

contribution to real GDP growth from transfers =

(change in real permanent transfers + change in real temporary transfers + change in real EUC transfers) / real PCE[t-1] * consshare * 100

consshare = 0.5*(nominal PCE[t]/nominal GDP[t] + nominal PCE[t-1]/nominal GDP[t-1])

PCE = personal consumption expenditures

Transfers are assumed to have lagged effects—modeled using MPCs

Change in transfers = MPC0*transfers[t] + MPC1*transfers[t-1] + … + MPC8*transfers[t-8]

<u>Permanent transfers (mpc0 = current quarter, mpc1 = previous quarter):</u>

fiscimp'mpc0=0.35

fiscimp'mpc1=0.25

fiscimp'mpc2=0.10

fiscimp'mpc3=0.05

fiscimp'mpc4=0.05

fiscimp'mpc5=0.05

fiscimp'mpc6=0.05

fiscimp'mpc7=0.05

fiscimp'mpc8=0.05

Temporary transfers:

fiscimp'mpct0 = .25

fiscimp'mpct1 = .15

fiscimp'mpcw = .02/4 (MPC wealth, divided by 4 because change in transfers is recorded at annual rate)

EUC transfers:

fiscimp'mpcu0=0.50

fiscimp'mpcu1=0.50

Taxes

Personal Income taxes

contribution to real GDP growth from personal income taxes =

(change in real permanent personal income taxes + change in real temporary personal income taxes + change due to inflation) / real PCE[t-1] * consshare * 100

Change due to inflation accounts for pre-1984 years, when personal and social insurance tax brackets were not adjusted for inflation (to account for “bracket creep”)

consshare = 0.5*(nominal PCE[t]/nominal GDP[t] + nominal PCE[t-1]/nominal GDP[t-1])

Taxes are assumed to have lagged effects—modeled using MPCs

Permanent personal income taxes:

fiscimp'mpcp0= -0.25

fiscimp'mpcp1= -0.06

fiscimp'mpcp2= -0.06

fiscimp'mpcp3= -0.06

fiscimp'mpcp4= -0.06

fiscimp'mpcp5= -0.06

fiscimp'mpcp6= -0.05

fiscimp'mpcp7= -0.05

fiscimp'mpcp8= -0.05

Temporary personal income taxes:

-fiscimp’mpcw = 0.02/4 (negative because an increase in taxes causes a decrease in wealth)

fiscimp'mpcpt0= -0.25

fiscimp'mpcpt1= -0.06

Inflation:

Same MPCs as permanent personal income taxes

Social Insurance taxes

contribution to real GDP growth from social insurance taxes =

(change in permanent social insurance taxes + change in temporary social insurance taxes + change due to inflation) / real PCE[t-1] * consshare * 100

Change due to inflation accounts for pre-1984 years, when personal and social insurance tax brackets were not adjusted for inflation (to account for “bracket creep”)

consshare = 0.5*(nominal PCE[t]/nominal GDP[t] + nominal PCE[t-1]/nominal GDP[t-1])

Taxes are assumed to have lagged effects—modeled using MPCs

Permanent social insurance taxes:

Same MPCs as permanent personal income taxes

Temporary social insurance taxes:

Same MPCs as temporary personal income taxes

Inflation:

Same MPCs as permanent personal income taxes

Corporate Income taxes

contribution to real GDP growth from corporate income taxes =

(change in permanent corporate income taxes + change in temporary corporate income taxes + change in investment) / real GDP[t-1] * 100

Taxes are assumed to have lagged effects—modeled using MPCs

Permanent corporate income taxes:

fiscimp'mpcc0= -0.06

fiscimp'mpcc1= -0.06

fiscimp'mpcc2= -0.06

fiscimp'mpcc3= -0.06

fiscimp'mpcc4= -0.06

fiscimp'mpcc5= -0.05

fiscimp'mpcc6= -0.05

fiscimp'mpcc7= -0.05

fiscimp'mpcc8= -0.05

Temporary corporate income taxes:

-fiscimp’mpcw = 0.02/4 (negative because an increase in taxes causes a decrease in wealth)

Investment:

change in investment =

(ctax.invest09.q/100*.0025)*real equipment[t-4] - (ctax.invest09.q[t-4]/100*.0025)*real equipment[t-4]

Ctax.invest09.q = 50 if bonus depreciation (partial expensing) is 50%

Assuming 50% expensing for bonus depreciation increases investment by 1 ppt at an annual rate in the current quarter (or 0.25 ppt at quarterly rate) and reduces investment by the same amount 4 quarters later

Production Taxes and Import Duties: Excise Taxes, Customs Duties, etc.

contribution to real GDP growth from production taxes… =

(change in permanent production taxes + change in temporary production taxes) / real GDP[t-1] * 100

Taxes are assumed to have lagged effects—modeled using MPCs

Permanent production taxes:

fiscimp'mpcb0= -0.10

fiscimp'mpcb1= -0.10

fiscimp'mpcb2= -0.10

fiscimp'mpcb3= -0.10

fiscimp'mpcb4= -0.10

Temporary production taxes:

-fiscimp’mpcw = 0.02/4 (negative because an increase in taxes causes a decrease in wealth)