MBA 611 SOBAM
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Keynesian Equilibrium without Interest Rates

general macroeconomic model

$C = a + c_o(Y - T)$ c_o = marginal propensity to consume (MPC)
$c_o = \Delta C/\Delta(Y - T)$ $MPS = 1 - c_o = \Delta S/\Delta(Y - T)$

$X = X_o - x_o Y$ x_o = marginal propensity to import (MPI) = $\Delta Im/\Delta Y$
$\Delta X/\Delta Y = - x_o$

- X = trade balance
  - $X < 0$ ⇒ CI
  - $X > 0$ ⇒ CO

$T = T_o + t_o Y$ t_o = income tax rate (economy average)

$G = G_o$ (exogenous)

- T - G = government budget
  - $T - G < 0$ ⇒ GB
  - $T - G > 0$ ⇒ GS

$I = I_o$ (exogenous)

spending equilibrium: $Y = C + I + G + X$

$Y = a + c_o[Y - (T_o + t_o Y)] + I_o + G_o + X_o - x_o Y$

$Y = \{1/[1 - c_o + c_o t_o + x_o]\}[a + I_o + G_o - c_o T_o + X_o]$

capital market equilibrium: total lending = total borrowing

Multipliers

$\Delta Y/\Delta a = \Delta Y/\Delta I_o = \Delta Y/\Delta X_o = 1/[1 - c_o + c_o t_o + x_o]$

$\Delta Y/\Delta G = 1/[1 - c_o + c_o t_o + x_o]$ • government spending multiplier

$\Delta Y/\Delta T_o = - c_o /[1 - c_o + c_o t_o + x_o]$ • tax multiplier (for T_o only)

- when G changes, ΔY = [government spending multiplier]ΔG
- when T_o changes, ΔY = [tax multiplier]ΔT_o

Example

$C = 550 + .8(Y-T)$ MPC = .8

$X = 110 - .1Y$ MPI = .1

$I = 320$

$T = 80 + .2Y$

$G = 210$

$Y = 550 + .8[Y - (80 + .2Y)] + 320 + 210 + 110 - .1Y$

$Y - .8Y + .16Y + .1Y = 550 - 64 + 320 + 210 + 110$

$.46Y = 1{,}126$

$Y^* = 2{,}448$ $T^* = 80 + .2(2{,}448) = 570$

$C^* = 550 + .8(2{,}448 - 570) = 2{,}052$

$S^* = (2{,}448 - 570) - 2{,}052 = -174$ (consumer borrowing)

$X^* = 110 - .1(2{,}448) = -135$ (trade deficit, so CI = 135)

$T - G = 570 - 210 = 360$ (budget surplus, so GS = 360)

$Y^* = 2{,}052 + 320 + 210 - 135 = 2{,}448$ (rounding)

- total lending comes from CI = 135 and GS = 360; total lending = 495
- total borrowing goes to consumers = 174 (since $S < 0$) and I = 320; total borrowing = 495 (difference is due to rounding)

Multipliers

$\Delta Y/\Delta G = 1/[1 - .8 + .16 + .1] = 2.174$ $\Delta Y = 2.174\Delta G$

$\Delta Y/\Delta T_o = - .8/[1 - .8 + .16 + .1] = -1.74$ $\Delta Y = -1.74\Delta T_o$