

M identical consumers \rightarrow same income
 \rightarrow same preferences
 \rightarrow same individual taxes $t_0 = \frac{T_0}{M}$
 $t_1 = \frac{T_1}{M}$ \Rightarrow same decisions
 c_0^*, c_1^*
 $s_0^* = \frac{B_0}{M}$

aggregate \downarrow

$$\begin{aligned} C_0 &= M c_0^* \\ C_1 &= M c_1^* \\ S_0^P &= B_0 \\ Y_0 &= M y_0 \\ Y_1 &= M y_1 \end{aligned}$$

\rightarrow individual

\Rightarrow we have a representative consumer

it follows that we can write the individual budget constraint as

$$M \left[c_0 + \frac{1}{1+r} c_1 \right] = M \left[y_0 + \frac{1}{1+r} y_1 - \left[t_0 + \frac{1}{1+r} t_1 \right] \right]$$

$$c_0 + \frac{1}{1+r} c_1 = y_0 + \frac{1}{1+r} y_1 - \left[G_0 + \frac{1}{1+r} G_1 \right]$$

since $T_0 + \frac{1}{1+r} T_1 = G_0 + \frac{1}{1+r} G_1$

Similarly, say $u = \ln(c_0) + \beta \ln(c_1)$

$$MRS_{c_0 c_1} = 1+r$$

$$\frac{c_1}{\beta c_0} = 1+r \Rightarrow \frac{M c_1}{M M c_0} = \frac{M}{M} (1+r)$$

$\therefore \frac{C_1}{\beta C_0} = 1+r$ (*) aggregate

\Rightarrow all that was valid at the individual level works at the aggregate level

\Rightarrow we can find C_0 as a function of Y_0

from (*) and B.C. $C_0 + \beta C_0 = Y_0 + \frac{1}{1+r} Y_1 - [G_0 + \frac{1}{1+r} G_1]$

$\frac{1}{1+r} C_1$

expected value of Y_1

$C_0 = \frac{1}{1+\beta} Y_0 - \frac{1}{1+\beta} G_0 + \frac{1}{1+\beta} \left[\frac{Y_1^e - G_1}{1+r} \right]$
 \hookrightarrow MPC

\therefore aggregate demand $C_0 + G_0$ is given by

$C_0 + G_0 = \frac{1}{1+\beta} Y_0 + \left[1 - \frac{1}{1+\beta} \right] G_0 + \frac{1}{1+\beta} \left[\frac{Y_1^e - G_1}{1+r} \right]$

$AD_0 = \frac{1}{1+\beta} Y_0 + \frac{\beta}{1+\beta} G_0 + \frac{1}{1+\beta} \left[\frac{Y_1^e - G_1}{1+r} \right]$

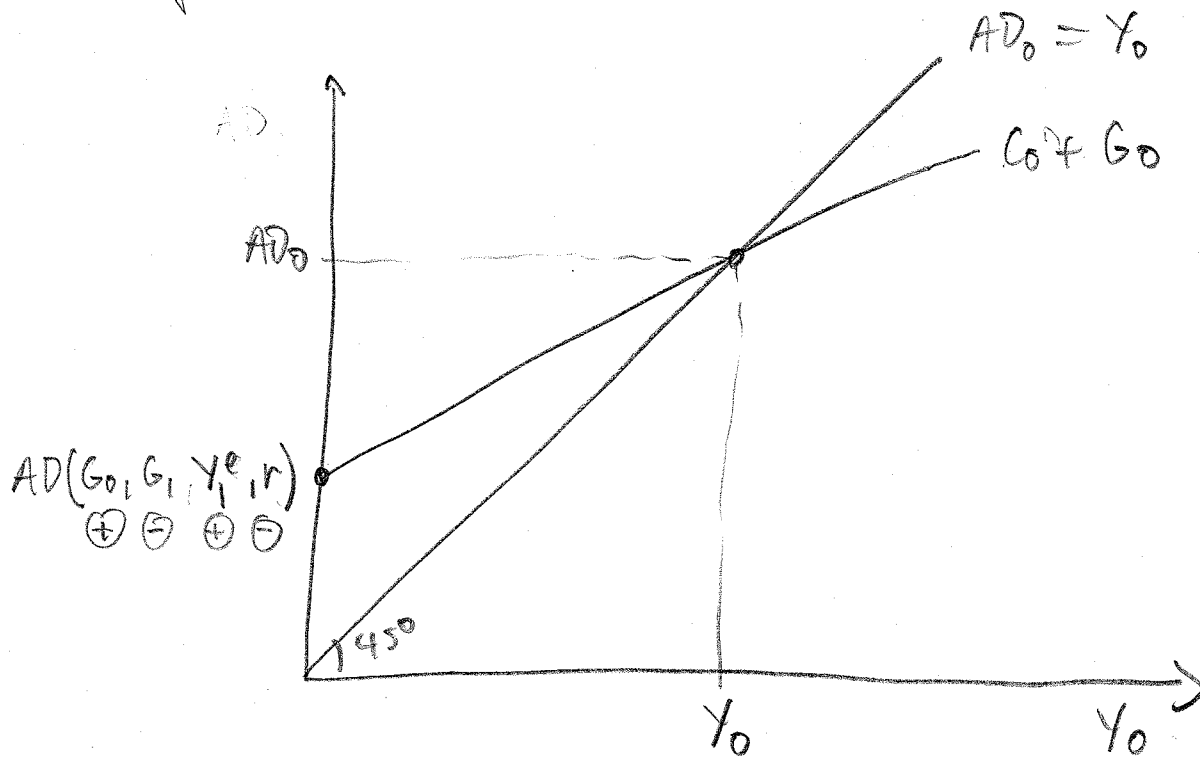
$AD(G_0, G_1^e, Y_1^e, r)$
 $\oplus \quad \ominus \quad \oplus \quad \ominus$

$\therefore \uparrow G_0 \rightarrow \uparrow AD$

$\uparrow Y_1^e \rightarrow \uparrow AD$ [consumption smoothing]

$\uparrow r \rightarrow \downarrow AD$ [$\uparrow P_0/P_1 \rightarrow \downarrow C_0$]

graphically,



To complete the analysis of the aggregate demand for goods, we need to add investment to it [recall $Y = C + G + I$]

↳ in order to do so, we need to reintroduce firms in our model. That is what we do next.