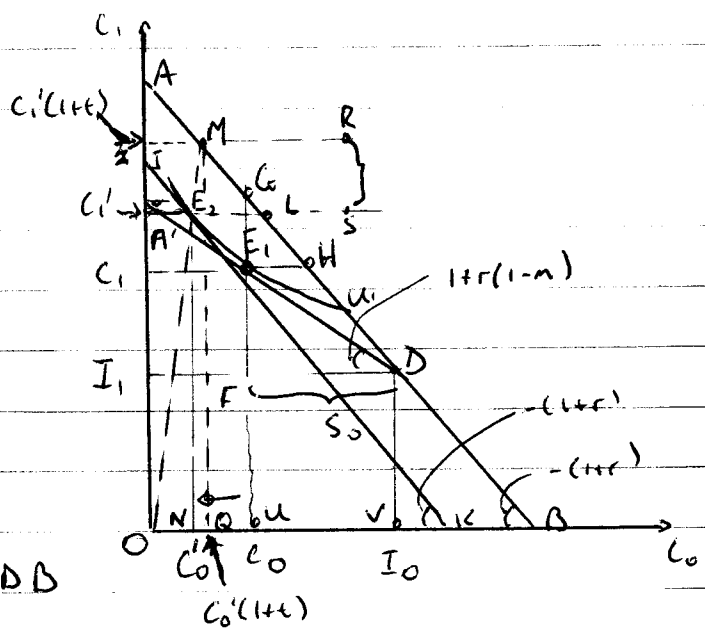


of the Marshallian LS curve $AECD < \text{tax} = ABCD$.

However, for true welfare measures we must use compensated D curves. The EV of the tax (i.e. the amount that the Ro would be willing to pay to have the tax removed is $A'EC'D$ (which corresponds to $G'F$ in Fig 1). This is greater than the tax collected by area BFC in Fig 2. Thus $E'BE'U$ in BFC which corresponds to $G'E$ in Fig 1.

2. (a) In the absence of tax the budget constraint would be AB . Individual can borrow or lend as much as is needed at interest rate, r .

With tax in place provided interest expense is nondeductible budget constraint becomes $A'DB$



As drawn individual saves $S_0 = FD = I_0 - C_0$

$$FG = S_0(1+r)$$

$$FE_1 = S_0(1+r(1-m))$$

Thus $E_1E = S_0 m$ is the interest income tax collected in period 1

The amt of period 0 foreign aid that could be financed for this is $E_1H = \frac{E_1E}{1+r}$

The govt could borrow E_1H to finance foreign aid and pay pay back $E_1E = E_1H(1+r)$ out of its tax collections in period 1

(b) With an equal-rate consumption tax in each period, that holds ~~budget~~ utility constant, the budget constraint becomes JK

The budget constraint is $c_0(1+t) + \frac{c_1(1+t)}{1+r} = I_0 + \frac{I_1}{1+r}$

$$\text{or } c_0 + \frac{c_1}{1+r} = \frac{1}{1+t} \left[I_0 + \frac{I_1}{1+r} \right]$$

$$= \frac{1}{1+t} OB = OK$$

As consumption is taxed at same rate in both periods, slope of intertemporal budget constraint is $-(1+r)$

No c_0 falls $c_0 \rightarrow c_0'$
 c_1 rises $c_1 \rightarrow c_1'$

E_2 is new after-tax consumption point = (c_0', c_1')

$NQ = c_0'(1+t) - c_0 = \text{tax collected period 0}$

$SR = c_1'(1+t) - c_1 = \text{tax collected in period 1}$

The amount of foreign aid that can be financed in period 0 is now higher ($E_2L > E_1H$) \therefore GST does not distort intertemporal consumption choices.

As drawn private savings rise from $UV = I_0 - c_0$ to $QV = I_0 - c_0'(1+t)$

However ~~savings~~ private savings could conceivably fall (This would be the case, for example, if indifference curves were L-shaped).

[National savings are the sum of private savings and government savings (i.e. tax collected in period 0 minus govt spending in period 0).]

This must rise

NB: Students don't have to worry about national savings this year - we have skipped this in discussion.

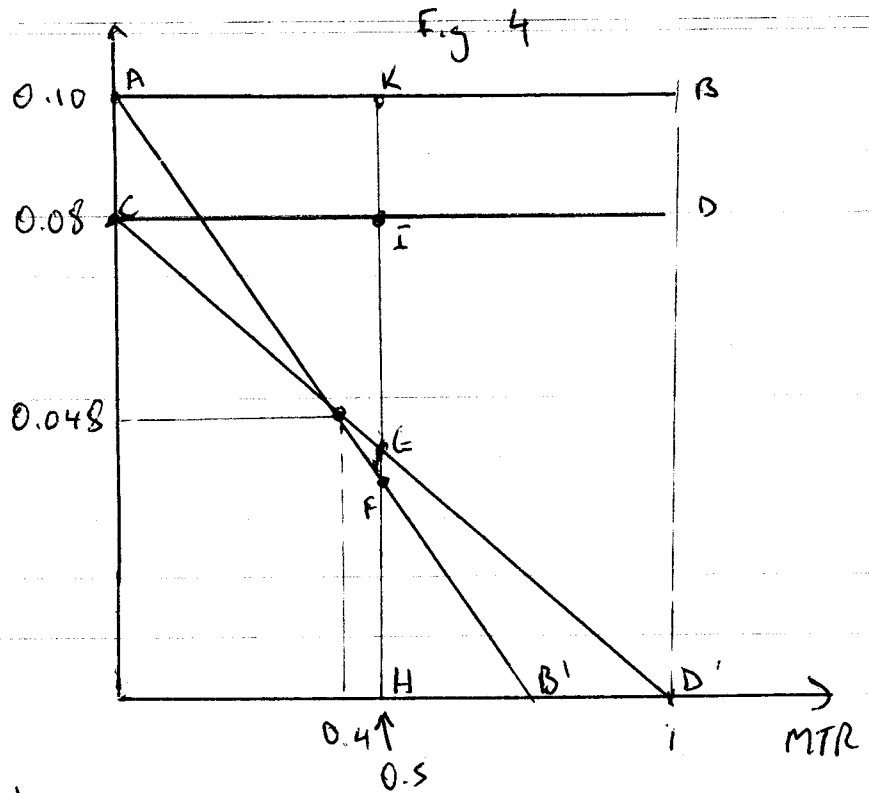
3. (a)

AB is pre-tax yield on bonds

CD is pre-tax yield on rental housing

Clearly a non-taxpayer will prefer bonds which pay $r = 0.1$ over rental housing which pays $f = 0.08$

For individual to be indifferent



$$f(1-m) = r(1-m) - \frac{m\pi}{1+\pi}$$

$$\text{or } f = r - \frac{m}{1-m} \frac{\pi}{1+\pi}$$

$$\text{Thus } \frac{m}{1-m} \frac{\pi}{1+\pi} = 0.03 \frac{m}{1-m} = r - f = 0.02$$

$$\Rightarrow \frac{m}{1-m} = \frac{2}{3}$$

$$\Rightarrow 3m = 2(1-m)$$

$$\Rightarrow 5m = 2$$

$$m = 0.4$$

$$\text{Here } f(1-m) = 0.08 \times 0.6 = ~~0.08~~ 0.048$$

$$r(1-m) - \frac{m\pi}{1+\pi} = 0.1 \times 0.6 - 0.4 \times 0.03 = 0.06 - 0.012 = 0.048$$

The after-tax return schedule on rental housing is ~~AB~~ CD'
The --- --- --- --- --- bonds is AB'

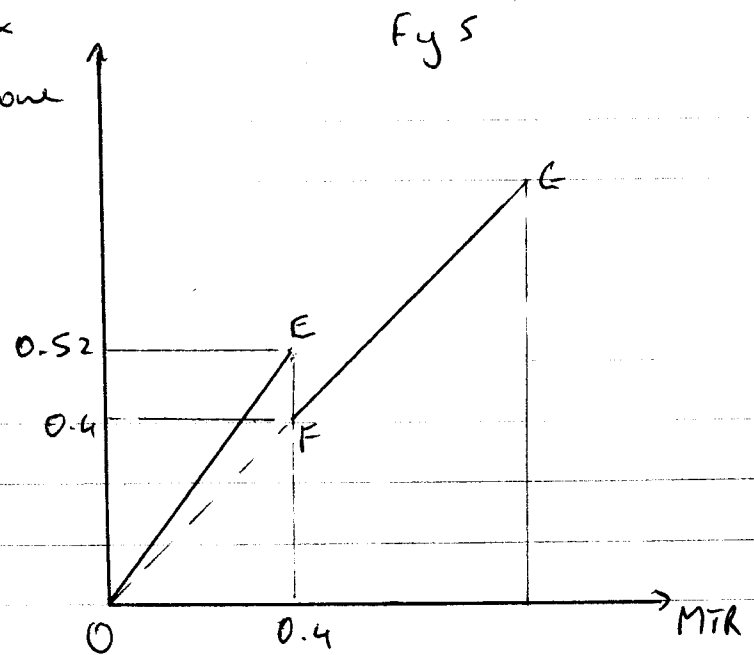
Those with $m < 0.4$ prefer bonds
 " " $m > 0.4$ prefer rental housing

Someone on $m = 0.4$ who only buys bonds pay 52% of real income in tax. Someone on $m = 0.4$ who only buys rental housing pays 40% of real income in tax

Then $\frac{\text{Tax}}{\text{Income}}$ schedule

will be OEFG in Fig 5

Those on MTR slightly below $m = 0.4$ will pay a greater proportion of ^{real} income in tax than those slightly above.



(b) Consider Fig 4 once more

For person with $m = 0.5$ the MB from investing a dollar in housing is $\beta(1-m) = 0.08 \times 0.5 = 0.04 = HG$

$$\begin{aligned} \text{The MC is } r(1-m) - \frac{m\tau}{1+\tau} &= 0.1 \times 0.5 - 0.5 \times 0.03 \\ &= 0.35 \text{ HF} \end{aligned}$$

Thus such an individual would gain FG by borrowing to invest a dollar in rental housing. There would be incentives to keep doing this but doing so reduces tax by $\beta K - KI > 0$. There would be incentives to keep borrowing to invest until the individual's MTR fell to $m = 0.4$.