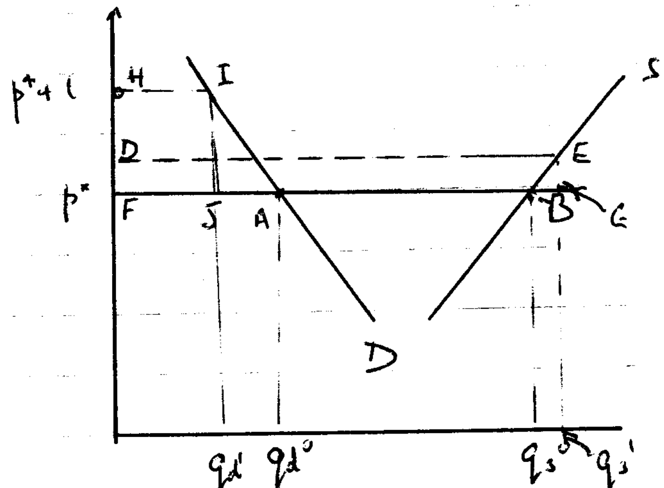
APPLIED TAX POLICY

MID-SEMESTER 200?

Undergraduate



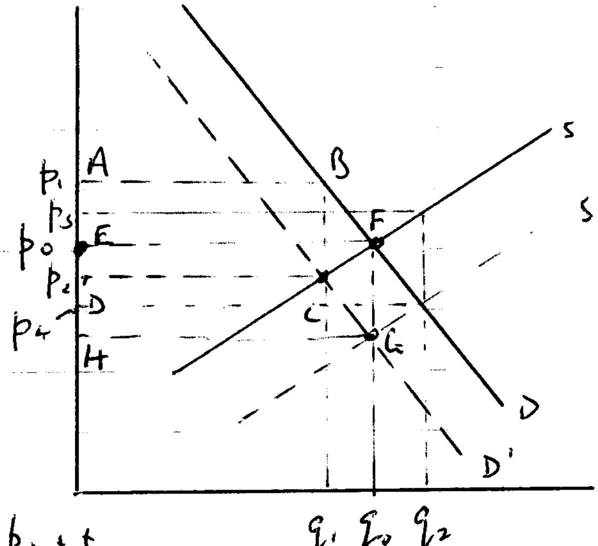
1 (a) Suppose world price for sugar is p^*. Australia can import or export as much sugar as it wishes at this price. Consumers will not be willing to pay more than p^* (because sugar ~~could~~ can be imported at this price) and firms will not accept less. The domestic price would be p^* in absence of taxes or ~~supp~~ subsidies. Firms would produce qs^0 and consumers would purchase qd^0. Exports would be AB

If a subsidy is provided to sugar production, this will boost the price producers receive (whether or not they export) to p^*+s (where s is the specific rate of subsidy. Producer surplus would rise by DEBF. The cost of the subsidy would be $s \times qs'$ = DEGF. This would be financed by imposing a higher tax on sugar consumption. A specific tax of t would ~~reduce~~ increase the price of sugar to consumers to p^*+t (whether the sugar is imported or produced domestically) and reduce the quantity demanded to qd'. Tax = $t\,qd'$ = HIJF = cost of subsidy = DEGF. Consumer surplus would fall by HIAF

Thus this tax makes consumers worse off and producers better off (as ~~it~~ is its explicit intention).

(b) In a closed economy a production or consumption tax and a consumption or production subsidy will have equal and offsetting effect.

Suppose initially no tax or subsidy
$p^c = p^p = p_0$ and $q = q_0$



If just taxed consumption $p^c_0 = p^p_0 = p_0$
(and there were no subsidy)
the perceived D curve would shift to D'. The price producers receive would fall to p_2. The price consumers pay would rise to $p_1 = p_2 + t$ where t is the specific tax rate and tax = ABCD

If just a prod^n subsidy at rate s, this would shift down perceived S curve to S' boosting p^p to p_s reducing p^c to p_4 and boosting output to q_2

The combined effect of a consumption tax of t and production subsidy is to leave output unchanged at q_0

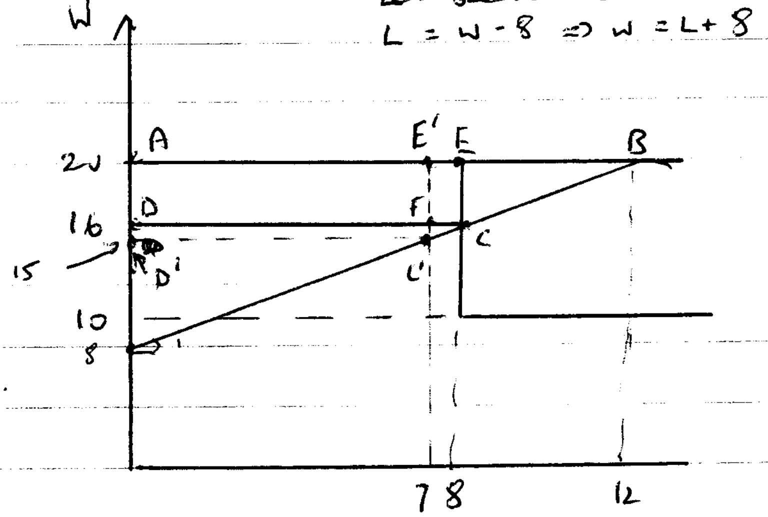
$$p^c = p^p + t - s$$

If $t = s$ $\quad p^c = p^p = p_0$

Tax Rev = subsidy cost = EFGH.

$L = W - 8 \Rightarrow W = L + 8$

2 (c) The EB_{EV} is the difference between the cost of the tax to the individual (ie. the EV or the amount the worker would be willing to pay to have the tax removed and the amount of tax collected.



The worker would be WTP
EV = ABCD to have tax removed but tax = AECD

$\Rightarrow EB_{EV} = EBC = \frac{1}{2} \times 4 \times 4 = \$8$ per day.

If tax rate ↑ to 25%

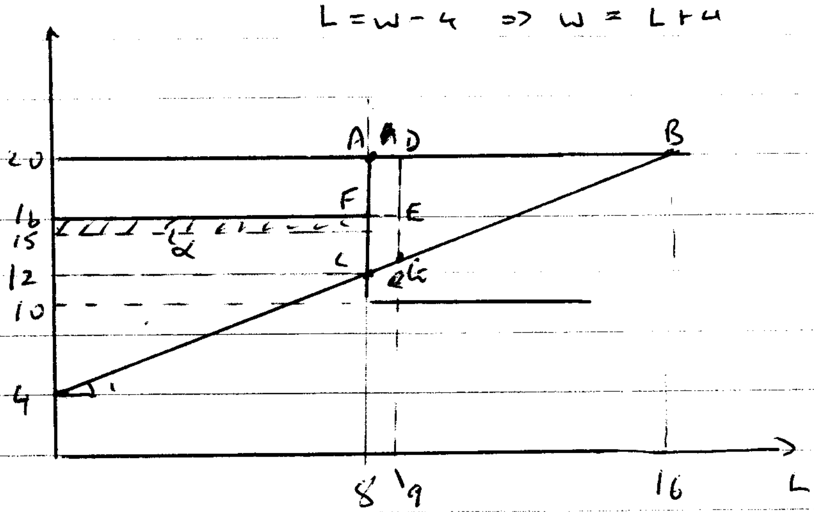
$\Delta EB = E'ECC' \approx 4 \times 1$ (or more accurately $\Delta EB = 4.5$)

$\Delta Tax = DFC'D' - E'ECF = 7 - 4 = 3$

$\Rightarrow MEB \approx \frac{4}{3}$

$L = W - 4 \Rightarrow W = L + 4$

(b)



Initially $EB_{EV} = ABC$

$= \frac{1}{2} \times 8 \times 8$

$= \$32$ per day

If the first MTR ↑ to 25%
both ~~EB~~ Tax and EV rise by $\alpha = 1 \times 8 = \$8$ per day
There would be no change in EB

$\Rightarrow MEB = 0$

If instead the upper limit of first income range were increased to \$180

EB would ↓ by ADEC $\approx 1 \times 8 = 8$ (or more accurately by \$7½ per day)

But tax would ↑ by ADEF = 4×1

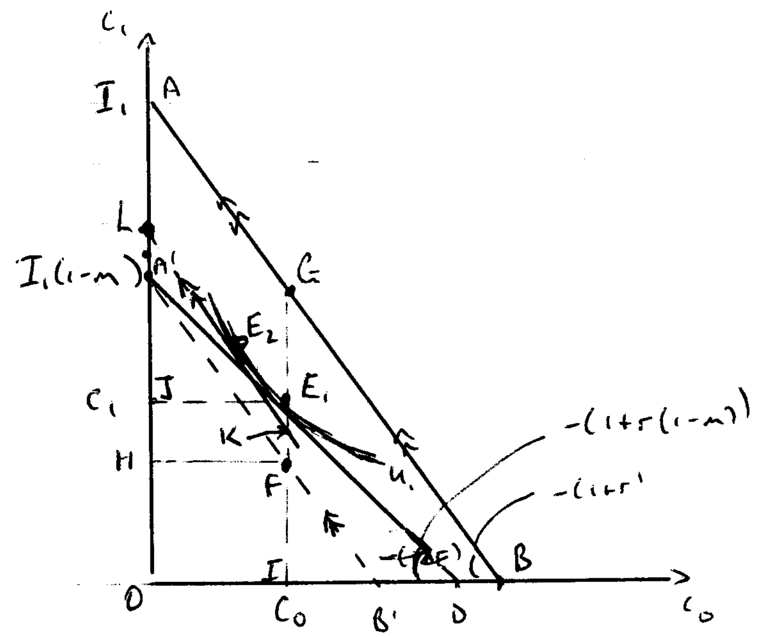
$\Rightarrow$ MEB $\approx \dfrac{-8}{4} = -2.$

---

3 (a) In absence of tax the budget constraint = AB

On each \$1 borrowed, 1+r must be repaid.

(b) With tax on period 1 earnings the budget constraint would be A'B' if interest were <u>not</u> deductible A'B' // AB



With interest deductibility the budget constraint becomes flatter |slope| = $1+r(1-m) < 1+r$

The budget constraint is A'D. With this constraint the individual is at E_1 with $u = u_1$

As the individual earns nothing in period 0 he borrows $B_0 = OI = c_0$. Tax on period 1 earnings is $I_1 m = AA' = FG$.

E_1F = tax savings as a result of interest deduction
(This is ∵ $HA' = B_0(1+r)$, $JA' = B_0(1+r(1-m))$
$\Rightarrow HJ = FE_1 = B_0 rm$).

Thus net tax = $FG - FE_1 = E_1G$.

If ~~th~~ taxes were removed and income of $LA = KG$ were taken away from the consumer u would remain u_1

Thus the EV of the tax (or the maximum amount the consumer would be willing to pay to have the tax removed) is ~~EG~~ $LA = KG$

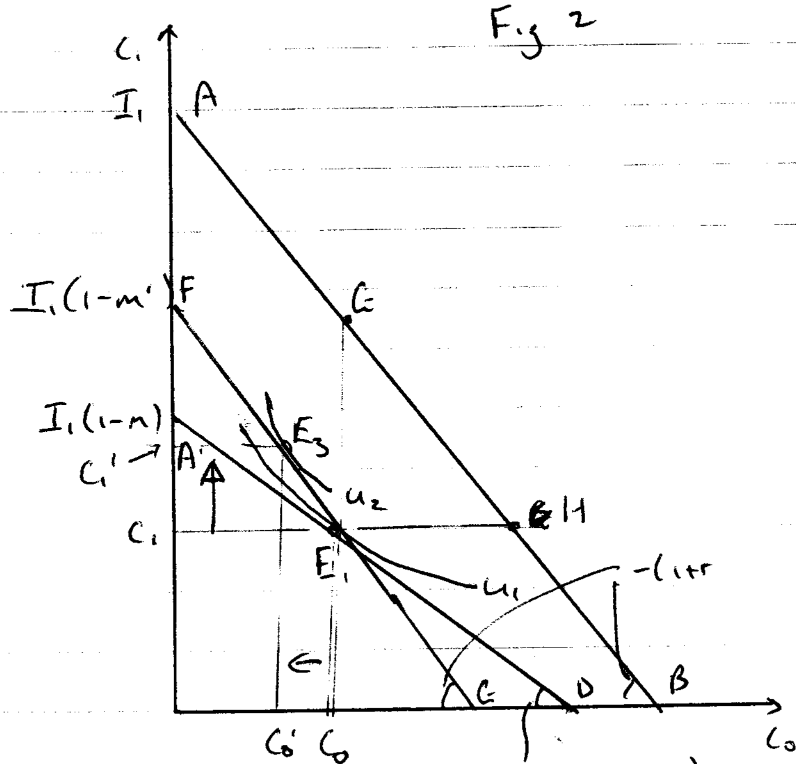
Tax $= E_1G$

$\Rightarrow EB_{EV} = KE_1$

(c) ~~If~~ Initially the FV of the tax is E_1G - Fig 2 or the PV of the tax is E_1H

If ~~the~~ interest is made nondeductible but the PV of the tax E_1H is unchanged the new budget constraint must pass through E_1

Fig 2



$C_0 \downarrow$ $\quad C_0 \to C_0'$
so borrowing falls
$C_1 \uparrow$ $\quad C_1 \to C_1' \uparrow$ and utility $\uparrow$

4. For indifference between double-taxed and fully taxed bond

$$r_D(1-2m) = r_F(1-m)$$
$$\Rightarrow 0.12(1-2m) = 0.08(1-m)$$
$$\Rightarrow 12(1-2m) = 8(1-m)$$
$$\Rightarrow 4 = 16m$$
$$m = 0.25$$

In this case $r_D(1-2m) = r_F(1-m) = 0.06 > r_S(1-\frac{m}{2})$

For indifference between taxed and semitaxed

$$r_F(1-m) = r_S(1-\frac{m}{2})$$
$$\Rightarrow 0.08(1-m) = 0.06(1-\frac{m}{2})$$
$$\Rightarrow 0.02 = (0.08 - 0.03)m$$
$$\Rightarrow m = 0.4$$

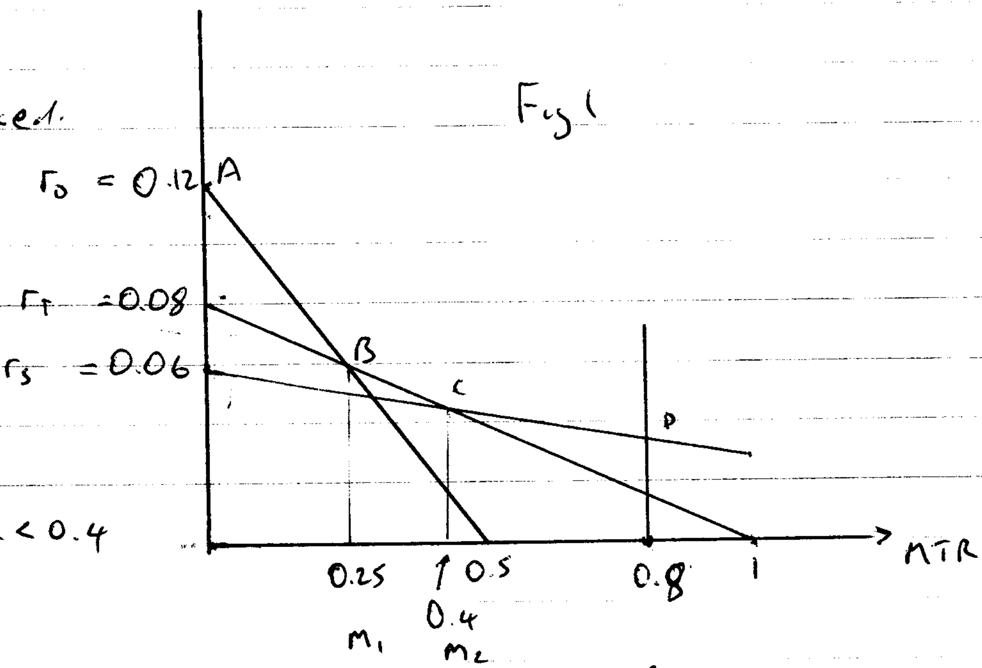
In this case $r_F(1-m) = r_S(1-\frac{m}{2}) > r_D(1-2m)$

ie $0.048 > 0.024$

Those with $m < 0.25$ will prefer double-taxed.

Those with $m = 0.25$ will be indifferent between double taxed and fully taxed

Those with $0.25 < m < 0.4$ prefer fully taxed

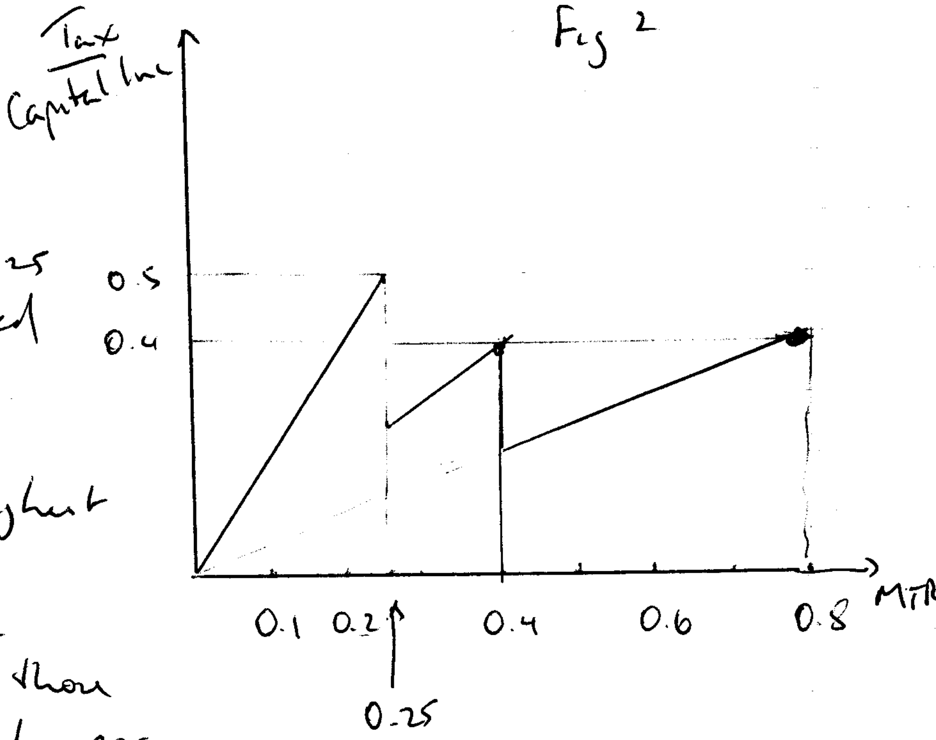


Those with $m = 0.4$ are indifferent between fully taxed and semitaxed.

Those with $m \geq 0.4$ will only hold semitaxed.

Thus tax as a proportion of capital income for these taxpayers will be as follows.

Fig 2



Those who pay the highest average tax rates on capital income will be those on MTR=0.25 who choose to hold only double taxed bonds.

This means that the highest average tax rates won't be paid by those on the highest MTRs. However those on the highest MTRs do earn the lowest after tax yields (the DE segment in fig 1).
~~Even though the tax system is less progressive than MTRs would suggest it will still be progressive (so long as~~
Suppose MTRs rise with income. Even though it might appear that those on lower incomes are paying the highest tax rates on capital income, this does not mean that the tax system is regressive.