Unlike earlier quiz keys which were more extensive, Note that these are outlines of the answers I expected!

Intermediate Macroeconomic Theory
Economics 317: Section A
Third Quiz: Fall 2012

Directions: ***Please answer all questions. Your answers should be as thorough and as precise as possible. If necessary you may continue your answer to any question at the back of the page.***

This quiz is based on the following description of 317land. 317land is a frictionless monetary economy in which the typical household has production opportunities summarized by the production function $y_t = f(l_t)$. In addition, households have access to a competitive commodity or goods market and to a perfect credit or bond market. The bonds in 317land are one period bonds that pay real interest at rate R. Assume that the typical household in 317land has an infinite planning horizon and seeks to maximize lifetime utility given by $U = u(c_1, l_1) + 1/(1+\rho)\, u(c_2, l_2) + 1/(1+\rho)^2\, u(c_3, l_3) + \ldots$, where c and l represent consumption and work effort and ρ is the subjective rate of time preference. Also assume that households' behavior is consistent with the permanent income hypothesis.

1. Suppose the typical household in 317land is initially optimizing along all relevant dimensions and then the economy experiences an improvement in technology.

(a) Thoroughly derive the marginal propensity to consume that would be applicable if the proposed change in the economic environment changes income. (5 points)

This is a permanent shock so you should derive the MPC/perm. See handout on Nishka for thorough derivation.

(b) Will the proposed change in the economic environment affect the representative household's intratemporal allocation plans? If no, explain why not. If yes, explain why and thoroughly explain the effects you envision including commentary about the magnitude of any effects. (5 points)

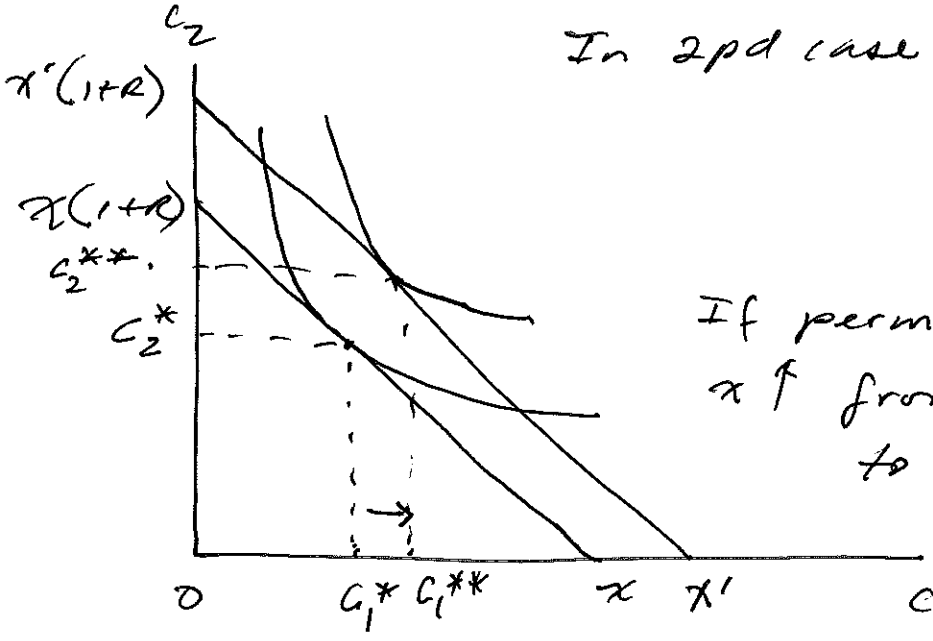
→ Discuss wealth effects on current pd w.e. and cons.

→ Explain substitution effect due to Δ in MPL

→ Discuss net effects.

→ Since this is a permanent shock magnitude will be large relative to what it would have been in temp case.

(c) Thoroughly explain how the proposed change in the economic environment will affect the representative household's consumption in the period of the shock and in subsequent periods? To be complete your answer must be informative about the magnitude of any effects you envision. (5 points)



In 2pd case $x = y_1 + \frac{y_2}{(1+R)} + \frac{b_0(1+R)}{P} - \frac{b_2}{P(1+R)}$

If perm shock, y_1 and y_2 ↑ so x ↑ from x to x'. This leads to ~~perm~~ outward shift (parallel) in the IBC.

Since cons is normal both C_1 and C_2 ↑. In the infinite horizon case C_1 consumption will ↑ in all periods. In addition since permanent, MPC = 1 so magnitude relatively large.

(d) Thoroughly explain how the proposed change in the economic environment will affect the representative household's work effort in the current period and in subsequent periods? To be complete your answer must be informative about the magnitude of any effects you envision. (5 points)

⇒ Wealth effect: work-effort will fall in current pd and in all subsequent pds.

⇒ Substitution effect (intratemporal) tells us w.e. will ↑ in current period and in all subsequent periods.

⇒ Overall effect on w.e. in the current period and in all subsequent pds depends on the relative magnitudes of the two effects.

⇒ Overall magnitude will tend to be small since we have opposing effects.

2. Suppose the typical household in 317land is initially optimizing along all relevant dimensions and then the economy experiences a natural disaster.

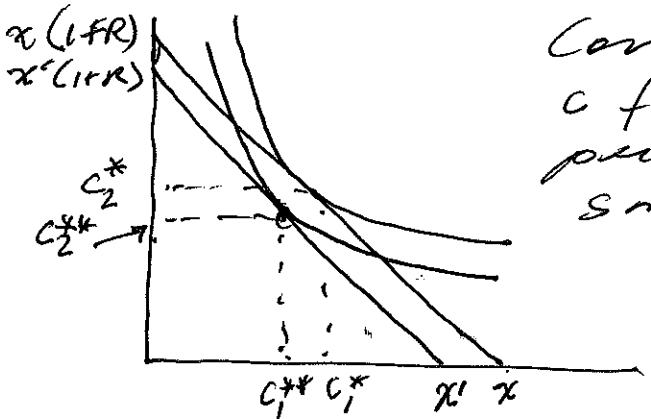
(a) Thoroughly derive the marginal propensity to save that would be applicable if the proposed change in the economic environment changes income. (5 points)

This shock is temporary so you should derive the MPC/temp. See handout on Nikka for thorough derivation.

(b) Thoroughly explain how the proposed change in the economic environment will affect the representative household's consumption in the period of the shock and in subsequent periods? To be complete your answer must be informative about the magnitude of any effects you envision. (5 points)

Again recall that $x = y_1 + \frac{y_2}{(1+R)} + \frac{y_3}{(1+R)^2} + \ldots + \frac{b_0(1+R)}{P}$.

Since shock is temp, y_1 falls but no change in subsequent y's. This implies that Δ in x is relatively small.



Consumption is normal so c falls in all subsequent periods but magnitude is small. Recall that

$MPC|_{temp} = \frac{R}{1+R}$.

(c) Will the proposed change in the economic environment affect the representative household's intertemporal allocation of work effort? If no, explain why not. If yes, explain why and thoroughly explain the effects you envision. (5 points)

Yes! This is a temp shock. The governing relative price is $\frac{MPL_1(1+R)}{MPL_2}$. The temp shock causes $\frac{MPL_1}{MPL_2}$ to $\downarrow$ and thereby $[\cdot] \downarrow$. This makes current pd leisure relatively cheaper so this shift leisure from pd 2 to pd 1 (alternatively shift work from pd 1 to pd 2). This is intertemporal subs of work-effort.