Notation Notes

I have to stress that I can't force myself to completely adopt Romer's notation. First I call employment N and effective labor AN or L. He calls employment L.

Second In old notes and on the black board I used rho where he used rho' . I have corrected the notes. There are new notes on the web.

Third I call total consumption C, he calls Consumption per capita C so Romer's C is what I call C/N.

There is already a problem that the letter capital C has the same shape as lower case c and is just bigger. Unfortunately there are 3 variables

My C = total consumption
His C = consumption per capita or C/N
Our c = consumption per unit of effective labor (C/AN for me C/AL for him).

In all my notes (includine these) I use C to mean total consumption.

Romer's notation is highly eccentric (really).

Finally after charter 1 he assumes that there is no depreciation delta = 0. This is really OK. It means he is interpreting Y as net national product = GNP – depreciation and interpreting the production function as giving value added minus depreciation as a function of capital and labour.

However, it does create problems with notation. Really one should distinguish 2 variables, the real interest rate paid to investors r_c and the user cost of capital. The user cost of capital is r_c + delta. If firms maximize profits the marginal product of capital is equal to r_c + delta.

In contrast the interest rate relevant to consumers is r_c. I agree it is best to assume delta = 0, but Romer is a bit sneaky switching assumptions between charter 1 and the rest of the book.

For charter II there really are different assumptions made by different economists. The mathematically simplest model makes a crazy assumption about A (technology). It is assumed that if A doubles not only do workers have twice the ability to do things but they also have twice the appetite. This means that the marginal utility of consumption depends on c = C/AN not on C/N. This isn't a totally crazy idea.

Like the assumption that technological progress is Harrod neutral, this makes it possible to fit the facts without making strong assumptions about the form of

functions. In this case, Romer really needs to assume a CES utility function. Otherwise the rate of growth of consumption will not be constant if r is constant.

However, with the assumption of appetite augmenting technological progress, any concave utility function gives the same result. There is a ratio of capital to effective labour (k) such that technology (A), GNP, total capital, total consumption and investment all grow at the same rate g and k must converge to this level.

I will present the model of labor and appetite augmenting technological progress as an excercize in the practice session.