Macroeconomics A; EI060

Quiz

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1 Autarky interest rate

Question: In an autarky economy with output being an endowment, how does patience and output growth affect the real interest rate?

Answer: The real interest rate is given by the slope of the indifference curve at the point of endowment (output today and tomorrow).

If the consumer is patient, the slope of the indifference curve is flatter than otherwise, as future consumption is more valued and thus the consumer is willing to forego a lot of current consumption (on the horizontal axis) for a bit of future consumption (on the vertical axis). The interest rate is thus lower.

Higher growth means and endowment point that is higher than otherwise (more future output, unchanged current output). A lot of future output means a lot of future consumption, hence a low marginal utility of consumption. As the slope of the indifference curve is $-u'(C_1)/[\beta u'(C_2)]$, the low $u'(C_2)$ indicates a steeper curve. If future consumption is high, the consumer would be fine with reducing it a lot for a moderate amount of initial consumption. The interest rate is thus higher.

2 Benefit of integration

Question: Does a move from autarky to financial integration always increase welfare?

Answer: Yes if we have a representative agent. Accessing the world financial market means that new configurations of consumption and output are now feasible. One can always remain at the autarky allocation, as the financial markets offers an opportunity to save or borrow, but not a requirement to do so. If the agent chooses a point that is not the autarky one, then it must be that this makes her better off.

The answer if different if we have heterogeneous agents. Some save, and like a high interest rate, while other borrow and like a low interest rate. If the country has few borrowers, the autarky

rate is low. Opening to international financial markets gives access to the higher world interest rate. Lenders like this, as they now get better investment opportunities. Borrowers don't, as they must now compete with these new opportunities, and thus accept a higher interest rate to attract lenders.

3 Nature of shocks and current account

Question: If a country has a positive shock to its GDP, does it affect the current account?

Answer: It depends on the persistence of the shock.

If the shock is permanent, the country now has a higher income forever. The optimal choice is to consume that extra income each period, and the current account is not affected.

If the shocks is temporary, the country has a higher income for only a few years. The optimal choice is to smooth consumption, so initially consume a bit more and save, and then use these savings to sustain the higher consumption once GDP is back to its initial value. We therefore have a current account surplus, followed by deficits.

4 Aging and the current account

Question: Consider that a society where people have a higher life expectancy saves more.

In a two country world, what is the impact of aging?

Answer: Consider the diagram with the saving supply and investment demands for the two countries. Aging leads to a shift of the saving supply to the right.

If aging occurs in all countries, the saving line shift identically in both. There is thus no impact on the current account (it cannot be that all save more abroad), but the real interest rate is reduced.

If only one country ages, the savings line shifts only in that country. We then have a situation where the real interest rate is lower (but not by as much as when all countries age), and the aging country has a current account surplus. This is because it saves by lending to the country where the saving behavior has not changed.

5 Lower bound on debt

Question: If the world interest rate offsets the discount factor, what is the requirement for solvency in a country where consumption must be at least equal to a (small) minimum that grows at the same rate as GDP?

Does the analysis imply that a country can always run an external debt and current account deficit? Do you see a problem if we add up the situation of all countries then?

Answer: The limit on the asset / GDP ratio is:

$$\frac{B^{total,min}}{Y} = -\frac{1-\phi-\varphi^{min}}{r-g}$$

If φ^{min} is small, the ratio is positive, hence $\frac{B^{total,min}}{Y}$ is negative. The country is solvent even with an external debt, as long as it is not below that value. The lowest possible current account is the same ratio times g, so the country can run a deficit (but only if the economy is growing: with growth, the debt increases at the same rate as GDP, and an increase in debt is a current account deficit).

But if all countries in the world are identical, doesn't this mean that they are all in debt? This cannot be the case, as debtors must be offset by creditor. A key assumption is that $\beta(1+r)=1$, so the world interest rate is lower than the country's autarky rate $\beta\left(1+r^{A}\right)=1+g$. In other words, the country faces an external environment with a lot of savings, so that foreign investors accept the low rate r. The country is thus different from the rest of the world, so its debt is held by foreign savers.

If all countries were identical, then we cannot have $\beta(1+r)=1$. Instead, we have $r^{A}=r$, as the world is a closed economy. In that case, with all countries being identical, any initial asset or liability will be kept and grow in line with GDP. Thus, solvency is simply the initial asset level.