Homework 7- Fiscal Policy

1. Read the (EROP) Economic Report of the President (2004, CH 6) and the 2017 Trustee’s Report for the Social Security System. Both are available online. Simply Google the title. The Trustee’s Reports are at http://www.ssa.gov/OACT/TR/ . Based on these readings, answer the following questions:

   • According to the EROP what are the main problems which “justify” a government role in old-age programs?
   • What does OASIDI mean? What are the OASIDI tax rates?
   • What is the fundamental reason that social security (not medicare) is projected to run out of money under current law? When is the combined OASIDI trust fund projected to be exhausted under current projections?

2. Consider the model developed in the textbook to analyze fiscal policy questions. Suppose an economy is in steady state with a pay-as-you-go social security system that each period taxes each young agent $s$ and pays each old agent $s$. Now, suppose that the government abolishes the social security system but still pays off the current old. More precisely, the new government policy is described by the following three points.

   (1) In the present and all future periods the government no longer collects social security taxes nor pays social security benefits, except to the current old.
   (2) The government pays off the current old the promised social security benefit by borrowing an amount equal to $s$ per young agent.
   (3) The government continues to borrow $s$ per young agent in all periods beyond the current period and finances this by taxing next period and beyond each old agent an amount equal to the net interest rate on the debt times the debt per young agent (i.e. the tax equals $sr$).

   What are the effects of this policy over time on the output-labor and the capital-labor ratios? Explain in detail your reasoning. Make an effort to explain your reasoning in an intuitive manner.

BONUS QUESTION:

3. The US Social Security system provides an old-age benefit. Although the actual system is complicated, a simplified version of the system works as follows. Every dollar of earnings a worker earns ($earn_j$) at age $j$ is taxed at the combined employee-employer rate of $\tau_{OASI} = .106$, provided earnings are below the maximum taxable earnings. When a worker earns an extra dollar in a year this increases the worker’s average lifetime earnings and old-age benefits increase as a workers average lifetime earnings increases.
Answer questions (a) and (b) below. Present your calculations in the form of a graph plotting age against the marginal tax rate. Explain the logic of your calculation.

(a) Calculate the marginal tax rate on earnings at every age $j$ between 23 and 64 for a worker whose average lifetime earnings is forecasted to be beyond the "first bendpoint" but not beyond the "second bendpoint"?

(b) Calculate the marginal tax rate on earnings at every age $j$ between 23 and 64 for a worker whose average lifetime earnings is forecasted to be beyond the "second bendpoint"?

**Critical Extra Information:**
1. Interest rate $r = .04$
2. Demographics: a worker works from age 23-64, retires at age 65 and lives to age 80 and then dies.
3. In retirement a worker receives an old-age benefit governed by the formulas below. The first formula holds for an individual with lifetime earnings greater than the "first bendpoint" level $bend_1$ but less than the second bendpoint $bend_2$. The second formula holds for an individual with lifetime earnings beyond the "second bendpoint".

\[
b(lifetime\ earnings) = .9 \times bend_1 + .35 \times (lifetime\ earnings - bend_1)
\]

\[
b(lifetime\ earnings) = .9 \times bend_1 + .35 \times (bend_2 - bend_1) + .15 \times (lifetime\ earnings - bend_2)
\]

\[
lifetime\ earnings = \frac{\sum_{j=23}^{64} earn_j}{64 - 23 + 1}
\]