Macroeconomics, Module 19: Public Debt (Chapter 14)

Homework Assignment: Return on Assets

(The attached PDF file has better formatting.)

In the U.S. (as in many countries) taxes are levied on nominal interest income, not real interest income. This homework assignment examines the effects of inflation on the real return on bonds. For a bond:

- The nominal return is the coupon interest (if the bond's market value does not change).
- The real return is the nominal interest rate divided by the inflation rate.

Suppose the real interest rate is 3%, and the *real pre-tax return* on the bond is 3%. We could state this as the expected inflation rate equals the actual inflation rate. The government (the IRS in the United States) takes 35% of nominal interest income. Assume expected inflation equals actual inflation.

A. If inflation is 0%, what is the nominal pre-tax return on bonds?
B. What is the real after-tax return on bonds?
C. If inflation is 8%, what is the nominal pre-tax return on bonds?
D. What is the real after-tax return on bonds?
E. How does a tax on nominal interest income affect savings and investment?
F. How does a tax on nominal interest income affect long-term economic growth?

For Parts A, B, C, and D: If the real interest rate is R and the expected inflation rate is J, the nominal interest rate is $(1 + R) \times (1 + J) - 1$.

For Part E: Savings equals investment. With the 8% inflation rate, is the real return on bonds positive or negative? What happens to people's incentive to save?

For Part F: Use the effect of the savings rate on long-term economic growth.

With a tax on nominal interest income, raising the money supply causes higher inflation, which affects the incentive to save, investment, and long-term economic growth. One might infer that money is not neutral. Barro would phrase this as:

> Money is neutral, but tax policy is not neutral. The government may think that raising the money supply reduces unemployment and offsets a recession. In fact, raising the money supply increases inflation, which raises the real tax rate on bond income, reduces the incentives to save, and lowers long-term economic growth.