

Homework Set Seven

1. (5%) Which will have a bigger effect on people's willingness to work: a 20% income tax or a 25% sales tax? Explain your answer.
2. (25%) The Government of Middle Backwater finds itself in a mess. The economy, primarily agricultural, is suffering from a drought, which meteorologists are certain will end in next year. GDP is well down, and the country is running a huge trade deficit. Economists have counseled patience, assuring that as the drought ends, things will come back to normal. Specifically, they feel certain the trade deficit will sharply narrow if not end or turn into a surplus next year. Others are not sure. Some politicians, while not doubting the weather forecasts, are dubious of the economic forecast.

They want a policy of higher government transfer payments. Specifically, they want a 10% tax imposed on all wage income next year - the year after the drought- , the funds to be paid out to workers affected by the drought now. (They seem to conveniently overlook the fact that most people will pay the tax and collect the benefits).

- Explain why economists think the trade deficit will end next year.
 - Show how the proposal for relief could cause the trade deficit to continue for another year.
3. (10%) The Republic of Backwater currently has a budget of \$100 million, which fortunately is the exact amount of revenue collected from a 10% sales tax. In fact, the sales tax exempts automobiles, fresh food, and cable TV service. The government has proposed extending the tax to cover these commodities as well. Economists have calculated that, if they did so, Backwater would be able to lower the rate to 8% and still collect \$100 million. The opposition party has an alternative plan, namely to repeal the sales tax and tax wage incomes instead. Alas, government economists have not calculated the appropriate rate, to raise \$100 million, but that detail need not bother you. Which plan (status quo, the 8% sales tax or the wage tax) is better on grounds of economic efficiency? Why?
 4. (10%) For each of the following cases, compute τ_w^* , the full tax on wage income:
 - A tax on wage income of 20%
 - A sales tax of 25%
 - A tax on wage income of 10% and a sales tax of 15%
 - A sales tax of 115%
 - A sales tax of 20% and a wage tax of 25%

5. (10%) Using Prescott's Basic Equation

$$h_{it} = \frac{1 - \alpha}{1 - \alpha + \frac{c}{y} \frac{\theta}{(1 - \tau_w^*)}}$$

- Calculate average hours worked assuming $\tau_w^* = 0.4$, $\alpha = 1/3$, $\theta = 1.5$ and $c/y = .8$. **Note: the answer should be a number like 0.15; interpret that as equivalent to people working 15 hours.**
- Calculate average hours worked assuming $\tau_w^* = 0.4$, $\alpha = 1/3$, $\theta = 1.5$ and $c/y = .82$. Give the intuition behind the difference in hours worked between your answers here and your answer in (a)
- Calculate average hours worked assuming $\tau_w^* = 0.4$, $\alpha = 1/3$, $\theta = 1.6$ and $c/y = .80$. Give the intuition behind the difference in hours worked between your answers here and your answer in (a)
- Calculate average hours worked assuming $\tau_w^* = 0.41$, $\alpha = 1/3$, $\theta = 1.5$ and $c/y = .80$. Give the intuition behind the difference in hours worked between your answers here and your answer in (a)

Case	Hours Worked	Comment
A		This is the base case
B		
C		
D		

6. (10%) Unlike its neighbors, Eastern Backwater is an open economy. That is, it both imports and exports. This year it is projecting a significant negative balance on current account. Newspaper editorials have been uniform in condemning the government for permitting the deficit to become so large. Unlike the United States, the large deficit on current account is not accompanied by a budget deficit. Backwater's constitution requires a balanced budget.

In an effort to eliminate the balance on current account, the government is proposing a massive cut in government transfer payments. Each citizen

would lose about \$100 a year of government subsidies for items like education, health care, taxi rides, etc. The budget savings would be used to cut τ_c ,

Your task is to analyze this proposal. Specifically:

- What will be the impact on GDP, Investment, Interest Rates and the Balance on Current Account in the coming year?

I suggest you fill in the following tables:

What will be the effect on	(circle one)
GDP	increase/decrease/unsure
Investment	increase/decrease/unsure
Interest Rates	increase/decrease/unsure
Balance on Current Account	become more negative/ become less negative

In each of the next four problems, you may assume that interest income is fully tax deductible. That is, if a taxpayer has net interest expense of (say) \$10,000 and interest income is taxable at a 25% rate, he gets a \$2,500 tax refund. And remember, update your spreadsheet. There are more problems coming next week.

7. (5%) John expects to live for four time periods. John expects income of \$0, \$200,000, \$400,000 and \$200,000 in periods 1, 2, 3 and 4. The interest rate is 50%. Wages are subject to a 50% tax, and interest income to a 25% tax. Compute John's consumption over his life cycle
8. (5%) John expects to live for four time periods. John expects income of \$0, \$200,000, \$400,000 and \$200,000 in periods 1, 2, 3 and 4. The interest rate is 50%. Wages are subject to a 50% tax, and interest income to a 50% tax. Compute John's consumption over his life cycle
9. (5%) Bill expects to live for four time periods. Bill expects income of \$0, \$200,000, \$400,000 and \$200,000 in periods 1, 2, 3 and 4. The interest rate is 100%. Wages are subject to a 50% tax. Compute Bill's consumption over his life cycle.

10. (5%) Sally expects to live for four time periods. Sally expects income of \$0, \$200,000, \$400,000 and \$200,000 in periods 1, 2, 3 and 4. The interest rate is 75%. Wages are subject to a 50% tax, and interest income to a 25% tax. Compute Sally's consumption over her life cycle.
11. (10%). For each of the following events, what will be the impact on the US trade deficit? Explain your answer. It is not enough to guess the right answers: you must explain why these are the correct answers. I want to see a well-labeled and well-explained graph of the demand for loans.
- The nation spends \$100 million a year in perpetuity this year to maintain monuments of no significance. The cost is paid for by assessing each citizen \$300 per year.
 - The nation spends \$100 million this year to maintain monuments of no significance. The cost is paid for by a tax on wage incomes this year
 - The nation begins to spend \$100 million a year in perpetuity to maintain monuments of no significance. The cost is paid for a higher tax on dividend income.
 - The nation decides to pay off the national debt, by assessing each citizen \$2,000 per year for as long as it takes to pay off the debt. (You may assume a bequest motive).