

Problem Set 1

This problem set explores several issues surrounding the Obama recovery plan within the context of the model we have developed. The problems involve the use of algebra, so if algebra is not your native language, team up with someone, or someones, who are better at it. But, this is not simply an algebra problem - the answers to the “why” questions count as much. You are encouraged to work in groups, but you **must** write up your answers individually. The problem set is due **Friday January 29**.

Consider the following model of the economy:

Equilibrium Condition:

$$Y = Z = C + I + G + NX$$

Behavioral Equations:

$$C = c_0 + c_1(Y - T)$$

$$T = t_0 + t_1Y$$

$$I = i_0$$

$$G = g_0$$

$$NX = nx_0 - nx_1Y$$

Letters with subscript zeros (like c_0) are autonomous (ie. exogenous) variables. Letters with subscript 1's (like c_1) are parameters (which have the same intellectual status as exogenous variables if you can change them - as, for example, the government could change t_1).

1) Using the model above, what is the Reduced Form Equation for GDP? What is the multiplier for a change in exogenous spending (like a change in c_0)? Compare this multiplier to the multiplier in the text on p. 50. Which multiplier is bigger? Why?

For the rest of the problem set ignore the economy on p. 50.

2) For our model, what is the multiplier for a change in government spending, g_0 ?

3) What if instead of increasing g_0 , the government decreases taxes (modeled for simplicity as a decrease in t_0). What is the value of the multiplier and how does it compare to the government spending multiplier in question 2? Why are they different?

4) The Obama Recovery Plan gave \$175 billion to state and local governments. This is because the states have constitutional requirements which force them to balance their budgets. These requirements can be written as:

$$g_0 = t_0 + t_1 Y$$

Derive a **New** reduced form equation for GDP assuming that the entire government sector (federal and state) must obey this requirement. Hint: the requirement adds a new equation to the system, which means that g_0 , t_0 , and t_1 cannot all be exogenous (once the government sets two of them, the balanced budget requirement determines the value of the third). You need, therefore, to use the requirement to eliminate one of the three before you solve for the reduced form equation. Your answers will be slightly different depending upon which of the 3 variables you eliminate, so for consistency, **everyone should eliminate g_0 .**

What is the multiplier now for a change in private sector exogenous spending (like a fall in c_0 or i_0 due to the collapse of the financial system)? How does this compare to the multiplier in Question 1? Does the requirement make the economy more or less stable¹ in comparison to the economy in question 1)? Why?

5) Was it a good idea for the Obama administration to give money to the states so that, in essence, they didn't have to obey their balanced budget requirement (since the money from the federal government counted as tax revenue for them)? Once the Obama stimulus money to the states ran out and they were required to balance their budgets without federal help, what do you think happened to their economies? Why?

6) Table 2 in Blinder-Zandi lists the spending increases and tax cuts of the Obama Stimulus package (the American Recovery and Reinvestment Act). For 2009, the payouts were \$179.5 billion in Spending and Transfers and \$129.4 billion in Tax Cuts. Assume that the multiplier for Spending and Transfers is 1.5 and the multiplier for Tax Cuts is 1. Using these numbers, how much of a GDP increase in 2009 should we have expected from the Obama Stimulus package?

7) Blinder-Zandi also estimate that in the absence of a fiscal stimulus the economy would have been \$1,100 billion below full employment in 2009. If you tried to close this Gap only by decreasing taxes, how big a dollar tax decrease would you need? If you tried to close this Gap only by increasing government spending and transfers, how big a spending increase would you need?

8) The Actual Federal Government Deficit for 2009 (including the Stimulus package) was \$1250 billion and the economy was \$897 billion below Full Employment (all policies included). If $t_1 = .36$, what was the value of the Full Employment Federal Government Deficit² in 2009? Is this bigger or smaller than the actual federal government deficit? Why

¹ Stable means that GDP moves less when hit by an exogenous shock.

² The Full Employment Federal Government Deficit is the government deficit **evaluated** at full employment (in other words, it is what the deficit would have been had the economy been at full employment).